

IN THE UNITED STATES COURT OF FEDERAL CLAIMS

LARRY GOLDEN,

Plaintiff,

V.

UNITED STATES,

Defendant.

1:13-cv-307-SGB

Judge Susan G. Braden

August 8, 2017

**FINAL AMENDED COMPLAINT**

On May 24, 2017, the court convened a telephone status conference. Pursuant to the status conference, the court grants Plaintiff leave to file a Final Amended Complaint and a Final Amended Claim Chart by August 15, 2017. The court ordered the Plaintiff in the telephone status conference: “to file a clean amended complaint that includes **all** of your [Plaintiff] concerns, **all** of your [Plaintiff] charges against the Government in one document”... “You’re going to put together a **whole** fifth and final complaint and a final claim chart, two documents”.

PLAINTIFF LARRY GOLDEN makes the following allegations in support of its claim for relief.

**PARTIES**

1. Plaintiff Larry Golden is a citizen of South Carolina and has a principal place of business at 740 Woodruff Road, #1102, Greenville, S.C. 29607.

2. The United States is the Defendant to this action based upon the actions and conduct of its agents, including at least the following agencies: Department of Homeland Security (DHS), Domestic Nuclear Detection Office (DNDO), Department of Defense (DoD), U.S. Defense Advanced Research Projects Agency (DARPA), National Science Foundation

(NSF), Department of Air Force (DOAF), National Institutes of Health (NIH), National Aeronautics and Space Administration (NASA), Department of Energy (DOE), Department of the Army (DOA), U.S. Army Edgewood Chemical Biological Center (ECBC), Army Research Laboratory (ARL), Department of the Navy (DON), U.S. Naval Air Systems Command (NAVAIR), Office of Naval Research's (ONR), U.S. Naval Research Laboratory (NRL), U. S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), Defense Threat Reduction Agency (DTRA), Environmental Protection Agency (EPA), and Federal Emergency Management Agency (FEMA), General Services Administration (GSA), Department of Justice (DOJ), Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD); Joint Acquisition Chemical Biological Radiological Nuclear Knowledge System (JACKS); Chemical Biological Radiological Nuclear Information Resource Center (CBRN-IRC), Defense Advanced Research Project Agency (DARPA), Homeland Security Advanced Research Project Agency (HSARPA), Department of Homeland Security Science & Technology Directorate (DHS/S&T), Department of Energy; Oak Ridge National Laboratory (DOE/ORNL), The Air Force Research Laboratory (AFRL), Department of Homeland Security Integrated Chemical Biological Radiological Nuclear Explosives (DHS/ICBRNE), and all other Government Agencies and personnel named in this pleadings.

### **JURISDICTION**

3. This is a claim pursuant to 28 U.S.C. §§ 1491(a) and 1498(a) for recovery of Plaintiff's reasonable and entire compensation for the unlicensed use and manufacture, for and by the United States, of inventions described in and covered by United States Patent Numbers: 7,385,497; 7,636,033; 8,106,752; 8,334,761; 8,531,280; RE43,891; RE43,990; 9,096,189;



9,589,439, and the Continuation Patent Application 15/530,839 filed March 06, 2017 that published on 06/29/2017 under Publication No: US 2017-0186259 A1.

4. The jurisdiction of this Court is based on the provisions of 28 U.S.C. §§ 1491(a) and 1498(a).

5. 28 U.S.C. § 1491(a): The United States Court of Federal Claims shall have jurisdiction to render judgment upon any claim against the United States founded either upon the Constitution, or any Act of Congress or any regulation of an executive department, or upon any express or implied contract with the United States, or for liquidated or unliquidated damages in cases not sounding in tort.

6. The Fifth Amendment of the United States Constitution includes a provision known as the Takings Clause, which states that "private property [shall not] be taken for public use, without just compensation."

7. 28 U.S.C. § 1498(a): Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.

**28 U.S.C. §§ 1491**

8. When the Government takes property without following the eminent domain procedure, the affected property owner (Plaintiff) has the right to bring an inverse condemnation "Takings" lawsuit against the Government entity(s) that has taken his property. The "Government Fifth Amendment Takings" lawsuit that is filed under 28 U.S.C. § 1491 by the Plaintiff is "inverse" rather than "direct" because it is brought by the patent owner, not by the

Government agency(s) or other entities having eminent domain power. Therefore, the Plaintiff understands he carries the burden of proof that his property rights were taken without the payment of compensation. This differs from a direct condemnation following eminent domain procedures which places the burden of proof upon the Government.

9. Inverse condemnation is not limited to the permanent physical taking of the Plaintiff's property. Rather, it can include a temporary taking or occupation of private or personal property that includes government regulation which burdens the property in such a way that the Patent Owner cannot derive any economical use out of it. When Government regulation significantly burdens private or personal property the inverse condemnation may be referred to as a "regulatory taking." Most importantly, in an inverse condemnation or regulatory taking scenario the government has failed to pay just compensation for the private property rights that have been taken.

10. Pursuant to the guidelines of a "Government Fifth Amendment Takings" of a Patent, the Government was given notice, made aware of, and told or signaled that the intangible private and personal property subject matter as outlined in the Plaintiff's patent(s) specifications and patent claims that was taken by the Government and used with the public, are significantly the same or equivalent to the claimed inventions of the patent owner (Plaintiff).

**Fifth Amendment Government Takings: Intellectual Property as Intangible Assets**

11. Intangible assets are non-physical assets (such as franchises, trademarks, patents, copyrights, and goodwill) that grant the potential for certain rights and privileges as well as the possibility for economic benefits to the owner. The subject matter of a patented invention is considered intangible.

12. In *Ruckelshaus v. Monsanto Company*, 467 U.S. 986 (1984) the Court held that a trade secret is constitutionally protected property, and a claim for its taking is within Tucker Act cognizance:

Although this Court never has squarely addressed the question whether a person can have a property interest in a trade secret, which is admittedly intangible, the Court has found other kinds of intangible interests to be property for purposes of the Fifth Amendment's Taking Clause." See, e.g., *Armstrong v. United States*, 364 U.S. 40, 44, 46 (1960) (materialman's lien provided for under Maine law protected by Taking Clause); *Louisville Joint Stock Land Bank v. Radford*, 295 U.S. 555, 596 -602 (1935) (real estate lien protected); *Lynch v. United States*, 292 U.S. 571, 579 (1934) (valid contracts are property within meaning of the Taking Clause). . . .

13. 467 U.S. at 1003. That patent rights are property rights, entitled to just compensation when taken by the United States, is not subject to revision at this late date. The premises as explained in 1910 remain intact, as explained in the record of that enactment:

Rep. Dalzell. But if the Government, through an authorized officer, has seen fit to appropriate a patent of a citizen without making any contract with him, or under circumstances that no implied contract can be inferred, then this law proposes to give him a remedy. It proposes to put him on the same footing that every other citizen is on who is not a patentee; that is, to give him the right to recover for property that has been taken from him by due process of law. And every time that the United States Government assumes to take forcibly, without the consent of the owner, a patented process, it violates the constitutional provision which says no man's property shall be taken without compensation and without due process of law. 45 Cong. Rec. 8755 at 8780.



14. For patent lawyers, however, an invention is not something physical, but a concept. Indeed, in his 1933 book *Double Patenting*, patent law author Emerson Stringham goes so far as to state that an invention is an abstraction:

“The difficulty which American courts . . . have had . . . goes back to the primitive thought that an “invention” upon which the patent gives protection is something tangible. The physical embodiment or disclosure, which, in itself is something tangible is confused with the definition or claim to the inventive novelty, and this definition or claim or monopoly, also sometimes called “invention” in one of that word’s meanings is not something tangible, but is an abstraction. *Definitions are always abstractions*. This primitive confusion of “invention” in the sense of physical embodiment with “invention” in the sense of definition of the patentable amount of novelty, survives to the present day, not only in the courts, but among some of the examiners in the Patent Office. There is no possibility of clear thinking, says Stringham, until it is understood that an invention as protected by a patent is an abstraction, thus an intangible asset. Patent practitioners refer to that abstraction as the “inventive concept.”

**28 U.S.C. §§ 1498**

15. Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner’s remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.

**Government Infringement: Intellectual Property as Tangible Assets**

16. Developed or manufactured products, devices, or apparatus are all physical or tangible assets.

17. In interpreting the terms of Section 271(f), it is critical to recall what a "patented invention" consists of when method patents are at issue. We have noted "the distinction between a claim to a product, device, or apparatus, all of which are tangible items, and a claim to a process, which consists of a series of acts or steps." *In re Kollar*, 286 F.3d 1326, 1332 (Fed.Cir.2002); *see also NTP*, 418 F.3d at 1322 ("The invention recited in a method claim is the performance of the recited steps."). Thus, a component of a tangible product, device, or apparatus is a tangible part of the product, device, or apparatus, whereas a component of a method or process is a step in that method or process.

18. Intellectual property (IP) is defined as original creative work manifested in a tangible form that can be legally protected. IP includes patents, trademarks, and copyrights.

19. The U.S. Patent and Trademark Office (USPTO) issues three different kinds of patents: utility patents, design patents, and plant patents. To qualify for a utility patent -- by far the most common type of patent -- an invention must be: a process or method for producing a useful, concrete, and tangible result. The purpose of the "useful, concrete and tangible result" requirement was to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept (which is not patentable), or is simply a starting point for future investigation or research.

20. When the court focuses on a tangible result rather than the principles behind the invention, it is easier to determine whether the patentee is claiming an abstract idea or an application of that idea. Instead of drawing the unmanageable line between the idea and its

application, the court instead can look at the result of the invention and determine whether the result is concrete and tangible.

### **PROCEDURAL HISTORY**

21. On December 22, 2015, the Court convened a telephone status conference to discuss how the case should proceed in light of the PTAB's final decision.

22. On December 23, 2015, an Order was signed by Judge Susan G. Braden granting Plaintiff leave to file an Amended Complaint by February 16, 2016 and directing the Plaintiff to submit a Claims Chart by March 15, 2016 (Dkt. No. 65).

23. On February 12, 2016, Plaintiff filed an Amended Complaint (Dkt. No. 68) alleging that, the Government: (1) was liable for the infringement of Plaintiff's '497, '752, '891, '990, and '189 Patents under 28 U.S.C. § 1498(a); and (2) violated the Fifth Amendment of the United States Constitution by taking Plaintiffs '497, '033, '752, '761, '280, '891, '990, '189 Patents and related '273 Application, without just compensation.

24. On February 19, 2016, Plaintiff filed its Claim Chart (Dkt. No. 69) identifying forty (40) devices that were developed or procured, as a result of Government solicitations, Government contracts, or National Science Foundation ("NSF") grants. The devices allegedly infringe independent and dependent claims in Plaintiff's '497, '752, '891, '990, and '189 Patents.

25. On April 8, 2016, the Government filed an Answer to the February 12, 2016 Amended Complaint (Dkt. No. 74), but fail to respond to Plaintiff Claim Chart filed on February 19, 2016.



26. On June 6, 2016, Plaintiff filed a Motion for Response to Claim Chart (Dkt. No. 80) and, also on June 6, 2016, Plaintiff filed a Motion for Entry of Devices Supplied to the Government (Dkt. No. 82).

27. On June 13, 2016, based on the arguments raised during the telephone status conference that convened on June 10, 2016, the court Ordered that the Government file a Motion To Dismiss; and stayed the Plaintiff's June 6, 2016 Motion for Response to Claim Chart and, Plaintiff's Motion for Entry of Devices Supplied to the Government (Dkt. No. 85).

28. On June 24, 2016, the Government filed a Motion to Dismiss Certain Accused Devices (Dkt. No. 88).

29. On July 5, 2016, Plaintiff filed a Response to the Government's Motion to Dismiss Certain Accused Devices (Dkt. No. 90).

30. On July 18, 2016, the Government filed a Reply to the Plaintiff's Response to the Government's Motion to Dismiss Certain Accused Devices (Dkt. No. 93).

31. On November 30, 2016, Judge Susan G. Braden signed a Memorandum Opinion and Order Denying the Government's Motion to Dismiss—Rule 12(b)(1) and Rule 12(b)(6) (Dkt. No. 94). "Under the Tucker Act, the United States Court of Federal Claims has jurisdiction to adjudicate a claim if the statute, regulation, or constitutional provision that is the basis for that claim "can fairly be interpreted as mandating compensation by the Federal Government for the damage sustained," *United States v. Mitchell*, 463 U.S. 206, 217 (1983). The NSF claims allege that the Government awarded research grants to develop portable devices that can: (1) identify dangerous chemical, radiological, and bacterial agents; and (2) track the spread of disease. Based on the alleged facts, it is plausible that the accused devices were used to further the military defense, national security, and public health interests of the United States: policies

that the Government has a fundamental interest in advancing.” The Court's Resolution to the “Government’s Motion to Dismiss” (Dkt No. 88): The June 24, 2016 Motion To Dismiss the February 12, 2016 Amended Complaint's National Science Foundation Claims, Pursuant To RCFC 12(b)(1)' is Denied. Under the Tucker Act, the United States Court of Federal Claims has jurisdiction to adjudicate a claim if the statute, regulation, or constitutional provision that is the basis for that claim "can fairly be interpreted as mandating compensation by the Federal Government for the damage sustained d.,' united states v. Mitchell, 463 U.S. 206, 217 (1983), and the plaintiff is "within the class of plaintiffs entitled to recover under the statute if the elements of [the] cause of action are established," *Greenlee County, Arizona v. United States*, 487 F.3d 871, 876 (Fed. Cir. 2007). "There is no further jurisdictional requirement that plaintiff make [] additional nonfrivolous allegation[s] that [he] is entitled to relief under the relevant money-mandating source.” *Run’s Helicopter Serv., Inc. v. Federal Aviation Agency*. 525 F.3d 1299, 1307 (Fed. Cir. 2008). Instead, "the consequence of a ruling by the court . . . that plaintiff's case does not fit within the scope of the [money-mandating] source . . . is simply if that] plaintiff loses on the merits for failing to state a claim on which relief can be granted." *Fisher v. United States*, 402 F.3d 1167, 1175-76 (Fed. Cir. 2005). Here, the February 12, 2016 Amended Complaint's NSF claims are based on section 1498(a), a statute that is money-mandating on its face' See 28 U.S.C. § 1498(a) ("Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.") (Emphasis added). Furthermore, Plaintiff is the owner of the United States patents asserted in this case and is therefore entitled to recover under

section 1498(a). See 28 U.S.C. § 1498(a). Accordingly, the court has jurisdiction to adjudicate the February 12, 2016 Amended complaint's NSF claims. The Government's June 24, 2016 Motion to Dismiss, pursuant to 12(b)(1), is denied. b. The June 24, 2016 Motion To Dismiss the February 12, 2016 Amended Complaint's National Science Foundation Claims, Pursuant To RCF'C 12(b)(6), Is Denied. The February 12, 2016 Amended Complaint's NSF claims allege sufficient facts to support a reasonable inference that the manufacture and use of the accused devices was "for the Government." see 556 U.S. at 678. The NSF claims allege that the Government awarded research grants to develop portable devices that can: (1) identify dangerous chemical, radiological, and bacterial agents; and (2) track the spread of disease. Based on the alleged facts, it is plausible that the accused devices were used to further the military defense, national security, and public health interests of the United States: policies that the Government has a fundamental interest in advancing. Accordingly, the court can reasonably infer that the use of the NSF-funded devices was for the Government; see, e.g., Hughes Aircraft co., 534 F.2d at 898 (finding that the government's participation in a satellite program was "for the Government," because the program was vital to the military defense and security of the United States); see also Madey, 413 F. Supp. 2d at 607 (M.D.N.C. 2006) (explaining that a use is "for the Government" if it is in furtherance and fulfillment of a stated Government policy and for the Government's benefit). The February 12, 2016 Amended Complaint's NSF claims also allege sufficient facts to plausibly establish that the use of the accused devices was "with the authorization or consent of the Government." Authorization or consent can be implied from the circumstances-"e.g., by contracting officer instructions, [or] specifications or drawings which impliedly sanction and necessitate infringement." Hughes Aircraft Co., 534 F.2d at 901. For example, in TVI Energy Corp., the United States Court of Appeals for the Federal Circuit held that the Government



impliedly sanctioned the use of a patented invention when it issued a solicitation that required bidders to submit for inspection, and perform live demonstrations of, the accused device. See *TVI Energy Corp.*, 806 F.2d at 1060. In this case, the relevant NSF grants anticipate that the awardees will develop and test the devices proposed in their applications. See, e.g., NSF Award No. 1444240 ('Annual and Final project reports, as required in the NSF Grant Conditions, should document all efforts and outcomes, whether or not they are successful.'). Government funding of research that will lead to the development and testing of an accused device supports a reasonable inference that the Government impliedly sanctioned infringing activity. (Dkt. No. 94).

32. On December 16, 2016, Judge Susan G. Braden signed a Discovery Order (Dkt. No. 97) for the Plaintiff to provide to the Government all relevant documents that is in Plaintiff's possession related to claims filed in the February 12, 2016 Amended Complaint, and that the Government produce documents related to the devices entered into the Government's Motion to Dismiss.

33. On February 3, 2017, Judge Susan G. Braden signed an Administrative Order (Dkt. No. 100) dismissing Plaintiff's Motion for Response to Claim Chart (Dkt. No. 80) filed on June 6, 2016, and Plaintiff's Motion for Entry of Devices Supplied to the Government (Dkt. No. 82), also filed on June 6, 2016. The court issued an order staying these Motions until resolution of the Government's Motion to Dismiss certain Devices. On June 24, 2016, the Government filed a Motion to Dismiss certain Devices and on November 30, 2016 the court entered an order denying the Government's Motion to Dismiss. On December 16, 2016, the court entered a Discovery order, ordering the Government to provide Plaintiff with documents related to the claims alleged in the February 12, 2016 Amended complaint, and ordering Plaintiff to provide the Government copies of all documents in his possession that are relevant to the claims

alleged in the February 12, 2016 complaint. The Motions stayed by the June 12, 2016 Order are moot' Therefore, these motions are dismissed without prejudice to being renewed.

34. On February 17, 2017, Plaintiff filed a Status Report (Dkt. No. 101). Plaintiff provided the Government with over 5000 pages of discovery documents that includes a Claim Chart of the alleged infringing devices.

35. On May 26, 2017, the Court issued an order for the Plaintiff to file a Final Amended Complaint and a Final Claim Chart on August 15, 2017. Only two documents. (Dkt. No. 116).

### **FACTURAL BACKGROUND**

36. The patents asserted in this 28 U.S.C. § 1491(a), "Government Fifth Amendment Takings of a Patent(s)" and 28 U.S.C. § 1498(a), "Government Infringement" Complaint are U.S. Patent No. 7,385,497 ("497 Patent"), U.S. Patent No. 7,636,033 ("033 Patent"), U.S. Patent No. 8,106,752 ("752 Patent"), U.S. Patent No. 8,334,761 ("761" Patent), U.S. Patent No. 8,531,280 ("280" Patent), U.S. Reissue Patent No. RE43,891 ("891 Patent"), U.S. Reissue Patent No. RE43,990 ("990 Patent"), U.S. Patent No. 9,096,189 ("189 Patent"), U.S. Patent No. 9,589,439 ("439 Patent) and the Continuation Patent Application 15/530,839 filed March 06, 2017 that published on 06/29/2017 under Publication No: US 2017-0186259 A1.

37. The above listed patents are lawfully issued, valid, and enforceable U. S. Patents.

38. Plaintiff is the sole owner of the entire right, title, and interest in and to the above listed patents.

39. Under the protection of the United States "Government", who has waived its "sovereign immunity" for claims resulting out of expressed or implied contracts; at least

Apple Inc., Samsung, LG, Qualcomm, Panasonic, and Motorola have entered into expressed contracts, agreements, and procurements with the “Government” for the manufacture, development, commercialization, and/or use of the Plaintiff’s communication/monitoring device. (Refer to paragraphs 49-78). As a result of the parties actions, their conduct, and their assumed intentions, an implied contract has been drawn between all the Government’s departments, branches, agencies, institutions, and government affiliates, and the “communication/monitoring device” manufacturers and developers of at least Apple Inc., Samsung, LG, Qualcomm, Panasonic, and Motorola.

40. The Patent Owner has narrowed the amended complaint to primarily that of Government infringement of the Plaintiff’s communication device / monitoring equipment (e.g. 95%) of at least one of the products grouped together by common features in the product groupings category of design similarity (i.e. computer terminal, personal computer (PC), laptop, desktop, notebook, tablet, handheld, cell phone, PDA or smart phone); claims that are directed to the utility of:

41. A communication device / monitoring equipment that has an embedded (built-in) biometric fingerprint scanner as a security feature designed to deny access to the device by unauthorized individuals.

42. A communication device / monitoring equipment that has an embedded (built-in) lock disabler device designed to lock the device after a certain number of unsuccessful attempts to open (use) the device.

43. A communication device / monitoring equipment that has an embedded (built-in) near-field communication (NFC) sensor for very short range radio frequency (RF) communication with a near-field communication (NFC) tag or device that is near-field



communication (NFC) capable. *Support for the Smartphone used as a stand-alone scanner:*

*“Still, another objective of the present invention is to provide a multi sensor detection and disabling lock system wherein the interchangeable detectors that comprise part of the system can be used as stand-alone scanners” (Patent No. 9,589,439 (“’439 Patent”); Col. #5; Lines 25-28).*

*“FIG. 12 is a representative schematic view of the multi sensor detection and lock disabling system of the present invention illustrating the sequence of steps undertaken by one detector when functioning as a standalone scanner for detecting an agent or compound” (Patent No. 9,589,439 (“’439 Patent”); Col. #6; Lines 26-30). “As shown in FIGS. 1, 2 and 9-13, the multi sensor detection and lock disabling system 10 includes a plurality of detectors 46 with each detector 46 adapted for and set up to sample for a specific agent or compound (biological, chemical, or radiological); and the detectors 46 are interchangeable for adapting to the needs and demands of future technology. The detectors 46 can also be used as standalone scanners.” (Patent No. 9,589,439 (“’439 Patent”); Col. #9; Lines 54-56). “The detector 46 functions as a stand-alone scanner and can be wirelessly interconnected...” (Patent No. 9,589,439 (“’439 Patent”); Col. #9; Lines 54-56).*

44. A communication device / monitoring equipment that has a physical interface that is at least in, on, upon, or adjacent the communication device / monitoring equipment for interconnecting the communication device / monitoring equipment to at least one of a sensor, a detector case, a multi-sensor detection device, a locking device, a cell phone detection device, a stall-to-stop vehicle slowdown system, or any of the products listed in any of the product grouping categories.

45. A communication device / monitoring equipment that has a software application interface that is at least in, on, upon, or adjacent the communication device /

monitoring equipment for interconnecting the communication device / monitoring equipment to at least one of a sensor, a detector case, a multi-sensor detection device, a locking device, a cell phone detection device, a stall-to-stop vehicle slowdown system, or any of the products listed in any of the product grouping categories.

46. A communication device / monitoring equipment that comprises at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short range radio frequency (RF) connection, or GPS connection.

47. “FIG. 17 is a perspective view of the multi sensor detection and lock disabling system of the present invention illustrating the incorporation of the features and elements of the detector case to a cell phone and cell phone case”; (Patent No. 9,589,439 (“’439 Patent); Col. #6; Lines 59-62).

48. “FIGS. 18 and 19 illustrate representative examples of the integration of portable electronic communication or telecommunication devices such as a cell phone 187a and/or a laptop computer 187b with the monitoring equipment 138”; (Patent No. 9,589,439 (“’439 Patent); Col. #13; Lines 8-11).

#### **Unauthorized Use of Plaintiff’s Communication / Monitoring Devices and Equipment**

49. The U.S. Government Accountability Office: According to the most recent OMB estimate, the federal government spends about \$1.2 billion annually on about 1.5 million mobile devices and associated services. View GAO-15-431. For more information, contact Carol R. Cha at (202) 512-4456 or [chac@gao.gov](mailto:chac@gao.gov).

50. Beginning in year 2008 and continuing, the “Government” has given authorization and consent through contracts, agreements, grants, and procurements, to at least the

mobile device manufacturers and developers of Apple, Samsung, Qualcomm, LG, Motorola, and Panasonic for the development and manufacture of mobile devices to be used by and for the “Government”. All contracts, agreements, and procurements were made with the mobile device manufacturers Apple, Samsung, Qualcomm, LG, Motorola, and Panasonic after the Patent Owner gave notice to the “Government” between the years 2006 and 2007. See Plaintiff’s discovery production at Section VII., A-E; and Docket No. 101 for the following:

51. 2008: “DHS S&T is pursuing what’s known as cooperative research and development agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. These written agreements, which bring together a private company and a government agency for a specific project, often accelerate the commercialization of technology developed for government purposes.” Quote taken directly from the Department of Homeland Security’s website.

52. 2008: “During the demonstration, chemical readings captured from the simulated scenarios as well as location data are transmitted to the test network. The cell phone number is also transmitted; however this information is scrubbed by the cell phone provider (per agreements with S&T) and is not displayed in the final output.”

53. 2012: “The U.S. Department of Defense expects in coming weeks to grant two separate security approvals for Samsung’s Galaxy smartphones, along with iPhones and iPads running Apple’s latest operating system—moves that would boost the number of U.S. government agencies allowed to use those devices. An approval by the Pentagon is considered as the highest standards in security.”

54. 2013: Smartphones and Handheld Devices for Defense and Homeland Security Strategies, Plans, Challenges & Opportunities Symposium:



55. “U.S. Coast Guard Smartphones Needs, Challenges & Opportunities” Rear Admiral Robert E. Day, Jr., Assistant Commandant for Command, Control, Communications, Computers & Information Technology, (C4IT) & Director, Coast Guard Cyber Command, Pre-Commissioning Detachment, U.S. Coast Guard.

56. “DoD Mobile Strategy” Mr. Mark Norton, Senior Engineer, Department of Defense, Office of the Chief Information Officer, Office of the Under Secretary of Defense (CIO/OSD).

57. “Update on Spectrum Sharing for Mobile Devices at the Tactical Edge” Mr. Julius Knapp, Chief Engineer, Office of Engineering and Technology, Federal Communications Commission (FCC).

58. “Secure Smartphone Computing, Needs and Opportunities for a Secure yet Mobile Platform” Mr. Keith Trippie, Executive Director, Enterprise System Development, Office of the Chief Information Officer, Department of Homeland Security (DHS).

59. “DISA’s Strategic Mobility Vision” Mr. Gregory Youst, Chief Mobility Engineer, Technology and Integration Division, Chief Technology Officer, Defense Information Systems Agency (DISA) (invited).

60. “Content-Based Mobile Edge Networking (CBMEN)” Dr. Keith Gremban, PhD., Program Manager, Content Based Mobile Edge Networking (CBMEN), Defense Advanced Research Project Agency (DARPA).

61. “Transformative Apps Program” Mr. Doran Michaels, Program Manager, Transformative Apps, DARPA.

62. “Windshear II Update” Mr. John-Isaac Clark, Chief Innovation Officer, Thermopylae Sciences & Technology & Mr. Lenwood Washington, Senior Systems Engineer, Mission Integration Directorate, Acquisition and Engineering, National Reconnaissance Office (NRO).

63. “Advancements in Mobile Devices for Chem-Bio Detection and Characterization” Dr. Calvin CHUE, PhD., Research Biologist, U.S. Army Research, Development and Engineering Command (RDECOM).

64. “ADAPT Unattended Ground Sensor Using Android Operating System and Original Design Manufacturers” Mr. Mark Rich, Program Manager, Strategic Technology Office, DARPA.

65. 2013: “The U.S. Department of Defense confirmed in a statement on Friday that Apple's iOS 6 mobile operating system is secure enough to connect to secure Pentagon networks.”

66. 2013: “Samsung's potential government deal signals new era for mobile security: Samsung may be ready to sign deals with the FBI and the U.S. Navy. Analysts say the news is proof that mobile in the enterprise has arrived. Samsung is close to inking a deal with the FBI and the U.S. Navy for mobile devices.”

67. 2013: “National Institute of Standards and Technology (NIST), which examines and tests mobile devices and technologies for security clearance, granted the Apple software FIPS 140-2 certification (Level 1) last Friday. This approves iPhones and iPads running the software in conjunction with the U.S. government's lowest level of national security clearance.”

68. 2013: “The U.S. Department of Defense announced today that it was further dropping its exclusive BlackBerry contract and opening all of its mobile communications networks to Apple, Google, and other device makers. ‘The Department of Defense is taking a leadership role in leveraging mobile device technology by ensuring its workforce is empowered with mobile devices,’ Defense Department Chief Information Officer Teri Takai said in a statement today.”

69. 2013: “Samsung recently received the nod from the Pentagon for any Samsung device protected by the Knox security software, which includes the Galaxy S4 and other compatible tablets.”

70. 2013: “For the first time, Apple's push into federal use opens up the U.S. government and military to competition for device procurement in the mobile space.”

71. 2014: “The mobile device management system—MDM—began operating Jan. 31 as a control system through which approved devices must operate to get access to Defense Department networks. The MDM enforces security policies by blocking or permitting certain functions on smartphones and tablets.”

72. 2014: “By opening its networks to Samsung and Apple devices, Defense Information Systems Agency (DISA) intends to broaden the variety of mobile computers that troops and civilian Defense Department employees can use in the field, on bases, in offices and elsewhere to receive and send information and work almost anywhere at any time.”

73. 2014: “Samsung has announced that five of its Galaxy devices have been approved for the U.S government's Defense Information System Agency (DISA) products list. The devices include the Galaxy S4, Galaxy S4 Active, Galaxy Note 3, the Galaxy Note Pro 12.2 and the Galaxy Note 10.1 2014 Edition. All of them are using Android 4.4 (KitKat) along



with Samsung's KNOX secure workspace platform, which includes system-level encryption for enterprise-based apps.”

74. 2014: “The United States Air Force is replacing 5000 legacy BlackBerry smartphones with Apple's iPhone, and eventually all of their BlackBerry users will have to make the changeover. The announcement, reported by Defense News, comes as the future of BlackBerry within the Department of Defense is debated, with the chips seeming to fall on the side of transitioning away from a network supporting a mish-mash of BlackBerry 6 and 7 devices to a mix of modern devices — though apparently without BlackBerry 10 in that mix.”

75. 2015: “Navy Plans for Android and iOS Devices. The Navy Enterprise Networks (NEN) Program Office is making progress on plans to transition to more modern mobile devices. Early users will be able to choose between the iPhone 5c and 5s, but the Navy wants to be as flexible as possible and allow users to pick the devices that will work best for them, and plans to approve a wider range of devices. Approval to use the iPhone 6 and iPad Air is expected in Jan. or Feb. 2015, and approval to use Samsung Android phones and tablets is expected in March.”

76. 2016: “This fiscal year Marines will receive Samsung smart phones that make calling for fire support easier, quicker and more accurate. The Target Handoff System Version 2, or THS V.2, is a portable system designed for use by dismounted Marines to locate targets, pinpoint global positioning coordinates and call for close air, artillery and naval fire support using secure digital communications.”

77. 2016: “Both the LG Electronics G5 and V10 received a security certification from the U.S. Defense Information Systems Agency, as well as a certification by the National Information Assurance Partnership, which administers independent tests to see if the

devices are reliable and secure. The two newer LG smartphone models have joined the select list of official devices that can be used by Department of Defense employees, according to the handset manufacturer and a DOD website. LG's older models, the G3 and G4 also received DISA certifications. The phones come equipped with LG's encryption technology from 2013, LG GATE. The advanced tech has secure email options, supports Virtual Private Network (VPN), and can remotely wipe the phone's memory."

78. 2016: "Use of Mobile Technology for Information Collection and Dissemination": A DACS Technology Assessment Report: The Data & Analysis Center for Software (DACS) was one of several United States Department of Defense (DoD) sponsored Information Analysis Centers (IACs), administered by the Defense Technical Information Center (DTIC). It was managed by the U.S. Air Force Research Laboratory (AFRL) and operated by Quanterion Solutions Inc. under a long term DoD contract. The website is no longer available and was replaced by <https://www.csiac.org/> DACS Report Number 518055: Contract FA1500-10-D-0010; Prepared for the Defense Technical Information Center; Prepared By: Chet Hosmer, Chief Scientist; Carlton Jeffcoat, Vice President, Cyber Security Division; Matt Davis, Malware Analyst; Wetstone/Allen Corporation of America; 10400 Eaton Place; Fairfax, VA 22030; Thomas McGibbon, DACS Director; Quanterion Solutions Inc. 100 Seymour Road Utica, NY 13502. (Paragraphs 79-84 below were taken from the Report)

79. Mobile technology is increasingly being utilized as a tool for information dissemination and collection across the Government. The Department of Defense (DoD), Department of Homeland Security (DHS), Intelligence communities, and law enforcement are among those agencies utilizing mobile technology for information management. The primary mobile devices being utilized are the iPad®, iPhone®,

Android™, and Windows Mobile™. The open architecture of these devices is advantageous for rapid application development and release.

80. New mobile technologies such as the iPhone®, iPad®, Android™ and similar devices have revolutionized the way information can be distributed. In the past, mobile devices such as Personal Data Assistants (PDAs) primarily focused on data storage and display. Today, an increasingly large number of devices are focusing not only on data storage and display, but also on communication and processing. As a result organizations have begun leveraging mobile technology as a means of information dissemination. These organizations include, but are not limited to, Government organizations such as the Department of Defense (DoD), the United States Army, the Department of Homeland Security (DHS), and a number of critical infrastructure organizations.

81. Significant advancements in mobile technology have occurred since September 11, 2001, both in the advancement of the devices and the infrastructures that support them. For example, mobile devices like the Android™ and iPad® can now operate equally and seamlessly via traditional cellular networks, as well as with infrastructure/ad hoc wireless networks.

82. The Defense Advanced Research Projects Agency (DARPA) has launched a program known as the Transformative Apps Program. The purpose of this program is to place the correct mobile applications into the hands of warfighters. To facilitate this, a military application store is being created to promote collaboration between developers and users in the field.



83. Another DoD initiative is Connecting Soldiers to Digital Applications (CSDA), sponsored by the Army Capabilities Integration Center (ARCIC) and the Army CIO/G6, with support from the Army Training and Doctrine Command (TRADOC) deputy commanding general for Initial Military Training, and other Army organizations. The purpose of this initiative is to determine the value of giving soldiers applications on mobile devices [ARMY]. During Phase One of the initiative the Army experimented with several types of smart phones to evaluate the effectiveness and usefulness of various mobile applications in the field. Devices tested included the Apple iPhone®, Google Android™ devices, and Microsoft Windows Mobile™ phones [C4ISR]. On these devices, applications were tested which covered a wide range of functions.

84. DoD is also starting to integrate chemical and biological sensors into mobile devices. Researchers from the University of California, San Diego have developed a miniature chemical sensor which can detect harmful gas in the air and automatically send the information about the type and transmitting range of the gas. The chemical sensor is a silicon chip with hundreds of independent miniature sensors. These can identify the molecule of specific toxic gas and then report on it.

85. The Bayh-Dole Act's coverage is not limited to procurement contracts governed by the Federal Acquisition Regulation but extends to all "funding agreements" for research and development. "Funding agreements" include contracts, grants, and cooperative agreements." Only "subject inventions" are covered by the Bayh-Dole Act's provisions, so it is important to understand the definition of this term. "Subject invention" is "any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement."

86. The statute is implemented in the FAR through the mandatory "Authorization and Consent" clause for solicitations and contracts:"

(a) The Government authorizes and consents to all use and manufacture, in performing this contract or any subcontract at any tier, of any invention described in and covered by a United States patent (1) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract or (2) used in machinery, tools, or methods whose use necessarily results from compliance by the Contractor or a subcontractor with (i) specifications or written provisions forming a part of this contract or (ii) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clause, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent herein above granted.

(b) The Contractor agrees to include, and require inclusion of, this clause, suitably modified to identify the parties, in all subcontracts at any tier for supplies or services (including construction, architect-engineer services, and materials, supplies, models, samples, and design or testing services expected to exceed the simplified acquisition threshold); however, omission of this clause from any subcontract, including those at or below the simplified acquisition threshold, does not affect this authorization and consent.

**COUNT I:**

**Fifth Amendment Takings of Plaintiff's Intangible Patent(s) Subject Matter: The United States, without Authorization and Consent, and without Just Compensation, has Taken**

**and Used with the Public the Intangible Patented Subject Matter of U.S. Patents:**

**7,385,497; 7,636,033, 8,106,752; 8,334,761, 8,531,280, RE43,891; RE43,990; 9,096,189 and 9,589,439.**

87. Upon information and belief, the United States has “taken” and continues to “take” the Plaintiff’s personal property for the benefit of the public without paying just compensation for the “takings”. Pursuant to the guidelines of a “Government Fifth Amendment Takings of a Patent” through the power of “eminent domain”: the Government has taken the private and personal property subject matter as outlined in the Plaintiff’s U.S. Patent No. 7,385,497 (“497 Patent”), U.S. Patent No. 7,636,033 (“033 Patent”), U.S. Patent No. 8,106,752 (“752 Patent”), U.S. Patent No. 8,334,761 (“761” Patent”), U.S. Patent No. 8,531,280 (“280 Patent”), U.S. Reissue Patent No. RE43,891 (“891 Patent”), U.S. Reissue Patent No. RE43,990 (“990 Patent”), U.S. Patent No. 9,096,189 (“189 Patent”), and U.S. Patent No. 9,589,439 (“439 Patent”), specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff; the Government was given notice, made aware of, and told or signaled that the private and personal property subject matter as outlined in the Plaintiff’s patent(s) specifications and patent claims that was taken by the Government are significantly the same or equivalent to the claimed inventions of the Plaintiff; the Government has taken and used for the benefit of the public, the private and personal property subject matter as outlined in the Plaintiff’s patent(s) specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff; resulting in the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff; the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property and by virtue of the access,



disclosure, manufacture, development or use, by or for the Government and its third party awardees, has destroyed the Patent Owner's competitive edge; through the use, disposal, and right of a government to take private or personal property for public use, the "Takings" has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property; without authorization and consent from the Patent Owner and without just compensation to the Plaintiff.

88. As a result of contracts, agreements, publications, solicitations, awards, announcements, and grants, the United States actions and conduct and the actions and conduct of its agents, including at least the following agencies: Department of Homeland Security (DHS), Domestic Nuclear Detection Office (DNDO), Department of Defense (DoD), U.S. Defense Advanced Research Projects Agency (DARPA), National Science Foundation (NSF), Department of Air Force (DOAF), National Institutes of Health (NIH), National Aeronautics and Space Administration (NASA), Department of Energy (DOE), Department of the Army (DOA), U.S. Army Edgewood Chemical Biological Center (ECBC), Army Research Laboratory (ARL), Department of the Navy (DON), U.S. Naval Air Systems Command (NAVAIR), Office of Naval Research's (ONR), U.S. Naval Research Laboratory (NRL), U. S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), Defense Threat Reduction Agency (DTRA), Environmental Protection Agency (EPA), and Federal Emergency Management Agency (FEMA), General Services Administration (GSA), Department of Justice (DOJ), Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD); Joint Acquisition Chemical Biological Radiological Nuclear Knowledge System (JACKS); Chemical

Biological Radiological Nuclear Information Resource Center (CBRN-IRC), Defense Advanced Research Project Agency (DARPA), Homeland Security Advanced Research Project Agency (HSARPA), Department of Homeland Security Science & Technology Directorate (DHS/S&T), Department of Energy; Oak Ridge National Laboratory (DOE/ORNL), The Air Force Research Laboratory (AFRL), and the Department of Homeland Security Integrated Chemical Biological Radiological Nuclear Explosives (DHS/ICBRNE), has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter, without license or legal right, or authorization and consent from the Plaintiff, Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

89. Plaintiff re-alleges and incorporates by reference the allegations of paragraphs 1 through 88, as if fully set forth herein.

90. Plaintiff is the sole holder of all rights, titles, and interests in and to the '497; '033, '752; '761, '280, '891; '990, '189 and '439 patents, including all rights to enforce this patent and collect past and future damages for infringement.

## **COUNT II:**

**Infringement of Plaintiff's Tangible Patented Claimed Inventions: The United States has Infringed and Continues to Infringe, the Tangible Patented Claimed Inventions of U.S. Patents: 7,385,497; 7,636,033, 8,106,752; 8,334,761, 8,531,280, RE43,891; RE43,990; 9,096,189; 9,589,439 and the Continuation Patent Application 15/530,839 filed March 06, 2017 that published on 06/29/2017 under Publication No: US 2017-0186259 A1.**

91. Upon information and belief, the United States has infringed, and continues to infringe, the Plaintiff's Tangible Patented Claimed Inventions of U.S. Patents:

7,385,497 (“497 Patent”), U.S. Patent No. 7,636,033 (“033 Patent”), U.S. Patent No. 8,106,752 (“752 Patent”), U.S. Patent No. 8,334,761 (“761” Patent”), U.S. Patent No. 8,531,280 (“280 Patent”), U.S. Reissue Patent No. RE43,891 (“891 Patent”), U.S. Reissue Patent No. RE43,990 (“990 Patent”), U.S. Patent No. 9,096,189 (“189 Patent”), U.S. Patent No. 9,589,439 (“439 Patent”) and the Continuation Patent Application 15/530,839 filed March 06, 2017 that published on 06/29/2017 under Publication No: US 2017-0186259 A1.

92. As a result of contracts, agreements, procurements, and grants, for the development and commercialization of Plaintiff’s tangible patented claimed inventions, the United States actions, which includes at least the following agencies: Department of Homeland Security (DHS), Domestic Nuclear Detection Office (DNDO), Department of Defense (DoD), U.S. Defense Advanced Research Projects Agency (DARPA), National Science Foundation (NSF), Department of Air Force (DOAF), National Institutes of Health (NIH), National Aeronautics and Space Administration (NASA), Department of Energy (DOE), Department of the Army (DOA), U.S. Army Edgewood Chemical Biological Center (ECBC), Army Research Laboratory (ARL), Department of the Navy (DON), U.S. Naval Air Systems Command (NAVAIR), Office of Naval Research's (ONR), U.S. Naval Research Laboratory (NRL), U. S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), Defense Threat Reduction Agency (DTRA), Environmental Protection Agency (EPA), and Federal Emergency Management Agency (FEMA), General Services Administration (GSA), Department of Justice (DOJ), Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD); Joint Acquisition Chemical Biological Radiological Nuclear Knowledge System (JACKS); Chemical Biological Radiological Nuclear Information Resource Center (CBRN-IRC), Defense Advanced Research Project Agency (DARPA), Homeland Security



Advanced Research Project Agency (HSARPA), Department of Homeland Security Science & Technology Directorate (DHS/S&T), Department of Energy; Oak Ridge National Laboratory (DOE/ORNL), The Air Force Research Laboratory (AFRL), and the Department of Homeland Security Integrated Chemical Biological Radiological Nuclear Explosives (DHS/ICBRNE), has used, authorized the use, manufactured and developed, without license or legal right, or authorization and consent, Plaintiff's tangible patented claimed inventions as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

### **LG Electronics G5 Smartphone**

#### **Count I:**

93. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), and the Department of Defense (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "LG Electronics G5 Smartphone".

94. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the

actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS), and the Department of Defense, has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

95. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

96. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "LG Electronics G5 Smartphone". **Manufacture for the Government**; 2008: The "Cell-All"

initiative. The Department of Homeland Security's (DHS) Science and Technology Directorate (S&T), Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis, Cell-All's program manager. S&T pursued cooperative agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. **Used by the Government**; 2016: Both the LG G5 and V10 smartphones can be used by the Department of Defense. The LG smartphones received a security certification from the U.S. Defense Information Systems Agency, as well as a certification by the National Information Assurance Partnership. Sensors will integrate with 261 million cell phones now used in the U.S. Leverage billions of dollars spent each year in sensor, carrier network and cell phone development. Multiple sensors network for chemical profiling; Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis, Cell-All's program manager. Multiple sensor units per phone are possible. Stephen Dennis envisions a chemical sensor in every cell phone in every pocket, purse, or belt holster.

97. As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS), the Department of Defense, and LG Electronics for the manufacture, development, commercialization, and/or use of the communication/ monitoring device "LG Electronics G5 Smartphone", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

### **LG Electronics V10 Smartphone**

#### **Count I:**

98. Upon information and belief, the various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS), and the Department of Defense (the United



States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “LG Electronics V10 Smartphone”.

99. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS), and the Department of Defense, has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

100. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had

a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

101. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the ’439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the ’990 Patent as a current manufacturer, consumer, and/or user of the “LG Electronics V10 Smartphone”. **Manufacture for the Government**; 2008: The “Cell-All” initiative. The Department of Homeland Security’s (DHS) Science and Technology Directorate (S&T), Cell-All aims “to equip your cell phone with a sensor capable of detecting deadly chemicals”, says Stephen Dennis, Cell-All’s program manager. S&T pursued cooperative agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. **Used by the Government**; 2016: Both the LG G5 and V10 smartphones can be used by the Department of Defense. The LG smartphones received a security certification from the U.S. Defense Information Systems Agency, as well as a certification by the National Information Assurance Partnership. Sensors will integrate with 261 million cell phones now used in the U.S. Leverage billions of dollars spent each year in sensor, carrier network and cell phone development. Multiple sensors network for chemical profiling; Cell-All aims “to equip your cell phone with a sensor capable of detecting deadly chemicals”, says Stephen Dennis, Cell-All’s program

manager. Multiple sensor units per phone are possible. Stephen Dennis envisions a chemical sensor in every cell phone in every pocket, purse, or belt holster.

102. As a result of contracts, agreements, and procurements with various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), the Department of Defense, and LG Electronics for the manufacture, development, commercialization, and/or use of the communication/ monitoring device “LG Electronics V10 Smartphone”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**Apple's iPhone / iPad Camera Biosensor for Facial Heart Rate Monitor  
(Detection device)**

**Count I:**

103. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Apple iPhone camera biosensor to measure heart rates”.

104. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a



public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

105. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

## **Count II:**

106. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22,

and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Apple iPhone camera biosensor to measure heart rates". A new iPhone app turns your device's camera into a biosensor to measure your heart rate. The app from the Rock Health accelerator program is called Cardio. The technology was developed by spouses Yukkee and Ming-Zher Poh at MIT's Media Lab. Cardio is powered by cutting-edge research and science conducted at the MIT Media Lab. Every time your heart beats, more blood is pumped into your face. Cardio uses your camera to track these tiny changes in reflected light that are not visible to the human eye and calculate your heart beat. Cardio works: look straight into the front camera of your iPhone/iPad to measure your heart rate from a distance.

107. As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS) and Apple Inc. for the manufacture, development, commercialization, and/or use of the communication/monitoring device "Apple iPhone camera biosensor to measure heart rates", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**Apple's iPhone 5, 5c, 5s, 6, 6 Plus and the iPad interconnected to the Apple Watch  
(detection device)**

**Count I:**

108. Upon information and belief, the various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the

Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Apple iPhone interconnected to Apple Watch detection device".

109. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

110. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of



the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

111. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Apple iPhone interconnected to Apple Watch detection device". iPhone / iPad; biosensor for detecting heart rate; leveraged internet and GPS connections; power source battery; CPU; light indicators) The heart rate sensor in Apple Watch uses photo plethysmography (heart rate (HR) and pulse oximeter oxygen saturation (SpO2) from wearable photoplethysmographic (PPG) biosensors. Technology based: Blood is red because it reflects red light and absorbs green light. When heart beats, the green light absorption is greater. By flashing its LED lights. Apple Watch requires an iPhone 5, 5c, 5s, 6, and 6 Plus. Apple Watch Bluetooth and Wi-Fi; therefore Apple Watch can 'speak' to the iPad. Apple Watch uses GPS and Wi-Fi to track distance; running indoors it uses accelerometer; cycling outdoors, it uses GPS.

112. As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS) and Apple Inc. for the manufacture, development, commercialization, and/or use of the communication/ monitoring device "Apple iPhone interconnected to Apple Watch detection device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**Apple's iPhone / iPad (monitoring equipment); Apple Watch (detection device);  
interconnected to the August Smart Lock (locking device)**

**Count I:**

113. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Apple iPhone interconnected to Apple Watch detection device and the August Smart Lock locking device”.

114. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (§§ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

115. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

116. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the ’439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the ’990 Patent as a current manufacturer, consumer, and/or user of the “Apple iPhone interconnected to Apple Watch detection device and the August Smart Lock locking device”. August Smart Lock (e.g. locking device): Apple Watch (e.g. detection device) just got another tool to make life easier: a digital door key on their wrists. Initiate a lock or unlock from your Apple Watch with just a swipe and a tap. Apple Watch requires an iPhone and/or iPad (e.g. monitoring equipment). Watch app also instantly sends a notification when someone unlocks your door.



117. As a result of contracts, agreements, and procurements with various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS) and Apple Inc. for the manufacture, development, commercialization, and/or use of the communication/monitoring device “Apple iPhone interconnected to Apple Watch detection device and the August Smart Lock locking device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**Apple’s iPhone / iPad (monitoring equipment); Apple Watch (detection device); Apple’s**

**HomeKit (interface / gateway); August Connect (interface / gateway);**

**Interconnected to the August Smart Lock (locking device)**

**Count I:**

118. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Apple iPhone interconnected to Apple Watch detection device, the Apple HomeKit interface/gateway, the August Connect interface/gateway, and the August Smart Lock locking device”.

119. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

120. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

121. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Apple iPhone interconnected to Apple Watch detection device, the August Connect interface/gateway, and the August Smart Lock locking device". August Connect (e.g. interface / gateway): Accessory product to August Smart Lock (e.g. locking device) and unlock your August Smart Lock from anywhere, right from your iOS or Android smartphone. Works with August App. Available for Android and iOS devices. Works with Apple® HomeKit™ (e.g. interface / gateway). Use Siri® on your iPhone®, iPad® or iPod touch® to lock and unlock, and check the status of your August Smart Lock. The August Connect is an accessory product to the August Smart Lock, and part of the August Smart Home Access System. August Connect requires an August Smart Lock and works with the free August iOS or Android app. Uses Wi-Fi to connect to your phone and Bluetooth to connect to the August Smart Lock.

122. As a result of contracts, agreements, and procurements various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS) and with Apple Inc. for the manufacture, development, commercialization, and/or use of the communication/monitoring device "Apple iPhone interconnected to Apple Watch detection device, the August Connect interface/gateway, and the August Smart Lock locking device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**Apple's iPhone / iPad (monitoring equipment); Apple Watch (detection device);  
interconnected to Ford's MyFord Mobile App (locking device)**

**Count I:**



123. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Apple iPhone interconnected to Apple Watch detection device and the MyFord Mobile app locking device”.

124. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (§§ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

125. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s

property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

126. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Apple iPhone interconnected to Apple Watch detection device and the MyFord Mobile app locking device". Ford has updated the MyFord Mobile app (e.g. locking device) for its electric and hybrid cars with Apple Watch (e.g. detection device) compatibility. Apple Watch requires an iPhone and/or iPad (e.g. monitoring equipment). That means from your wrist, you can turn on the temperature controller, lock or unlock the doors, check your mileage, and view data from your last trip, such as miles per gallon and percentage of electric miles driven. It also means you can check your car's battery status, get directions back to your car, and more, all from your Apple Watch.

127. As a result of contracts, agreements, and procurements with various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS) and Apple Inc. for the manufacture, development, commercialization, and/or use of the

communication/monitoring device “Apple iPhone interconnected to Apple Watch detection device and the MyFord Mobile app locking device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**Samsung Galaxy s6 "Fingertip Heart Rate Monitor"**

**Count I:**

128. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Samsung Smartphone built-in Heart Rate Monitor”.

129. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (§§ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license



or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

130. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

131. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Samsung Smartphone built-in Heart Rate Monitor". "Samsung included in the Galaxy S5 and S6 its built-in Heart Rate Monitor (detection device). Samsung integrated its heart rate sensing technology into the same housing that holds the camera's LED flash. The Galaxy S5 and S6 handles all health-related functions — including its Fingertip Heart Rate Monitor — in Samsung's S Health

app on your phone. You'll be taken to a screen that gives you a prompt to place your finger on the heart rate sensor, which can be found on the back of the phone.

132. As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS) and Samsung for the manufacture, development, commercialization, and/or use of the communication/monitoring device “Samsung Smartphone built-in Heart Rate Monitor” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**Samsung Galaxy s6 interconnected to the "Samsung Gear S2 Smartwatch"**

**Count I:**

133. Upon information and belief, the various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Samsung Smartphone interconnected to the Smartphone Gear S2 Smartwatch (detection device)”.

134. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the

interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

135. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

136. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Samsung



Smartphone interconnected to the Smartphone Gear S2 Smartwatch (detection device)". The Samsung Gear S2 smartwatch (e.g. multi-sensor detection device: interconnected to monitoring equipment – Samsung Galaxy s6; biosensor for detecting heart rate; leveraged internet and GPS connections; power source battery) has a solid health tracking and slightly better battery life than other high-end smartwatches. It works with a variety of Android phones. Before using your Gear S2, you will need to connect it to a mobile device (e.g. Galaxy S6) using the Samsung Gear application. The Gear S2 sensors include: Accelerometer; Gyroscope; Heart Rate; Ambient Light; and, Barometer. Connectivity include: 802.11n WiFi; Bluetooth 4.1; NFC. GPS include: The Gear S2 3G includes a GPS receiver and two apps, Nike+ and S Health, that include GPS tracking support.

137. As a result of contracts, agreements, and procurements with various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS) and Samsung for the manufacture, development, commercialization, and/or use of the communication/ monitoring device "Samsung Smartphone interconnected to the Samsung Gear S2 Smartwatch detection device" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**Samsung Galaxy s6 (smartphone) and Samsung Gear S2 (smartwatch) interconnected to the "Yale Assure Lock" (locking device)**

**Count I:**

138. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal

property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Samsung Smartphone interconnected to the Samsung Gear S2 Smartwatch detection device and the Yale Assure Lock locking device”.

139. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

140. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had

a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

141. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the ’439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the ’990 Patent as a current manufacturer, consumer, and/or user of the “Samsung Smartphone interconnected to the Samsung Gear S2 Smartwatch detection device and the Yale Assure Lock locking device”. The Yale Assure Lock with Bluetooth has five digital keys sent to the Digital Keys app by a Yale central server computer. The Assure companion app is available for iOS and Android devices and the Samsung Galaxy Gear S2 smartwatch. The Gear S2, will need to be connected to a mobile device (e.g. Galaxy S6). The lock communicates with the app only via Bluetooth, the phone must be within 30 feet to work with it. Unlocking the Assure Lock with a Gear S2, users touch the screen to activate the digital key. Then, touch the lock screen to unlock the deadbolt.

142. As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS) and Samsung for the manufacture, development, commercialization, and/or use of the communication/monitoring device “Samsung Smartphone interconnected to the Samsung Gear



S2 Smartwatch detection device and the Yale Assure Lock locking device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**Samsung Galaxy s6 (smartphone) and "Samsung SmartThings Hub" (interface-gateway)  
interconnected to the Yale Assure Lock (locking device)**

**Count I:**

143. Upon information and belief, the various Government Agencies (§§ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Samsung Smartphone interconnected to the Samsung SmartThings Hub interface/gateway and the Yale Assure Lock locking device”.

144. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (§§ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public,

authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

145. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

146. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Samsung Smartphone interconnected to the Samsung SmartThings Hub interface/gateway and the Yale Assure Lock locking device". The SmartThings app turns the Samsung Galaxy S6 smartphone into a remote to control all of the smart devices in your home. Available for download for

Android, iOS and Windows. The Samsung SmartThings Hub communicates information from your smartphone to all of your different connected products—regardless of their wireless protocol—so that you can easily monitor and control them from the free SmartThings app. Anyone with broadband Internet connection can easily set up their Hub. By adding a compatible camera, customers can also get accompanying video clips. Allows you to connect all of your different smart locks (e.g. Yale Assure Lock), lights, outlets, and thermostats. Once the Samsung SmartThings Hub and SmartThings app is set-up; can add as many devices as wanted to customize the home. Works with the following brands: Samsung, Honeywell, Schlage, and Yale, First alert, D-Link, Leviton, Bose, Cree, and others.

147. As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS) and Samsung for the manufacture, development, commercialization, and/or use of the communication/monitoring device “Samsung Smartphone interconnected to the Samsung SmartThings Hub interface/gateway and the Yale Assure Lock locking device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**Samsung Galaxy s6 (smartphone) and Samsung Gear S2 (smartwatch)**

**Interconnected to the "Volkswagen Car-Net e-Remote"**

**(locking device)**

**Count I:**

148. Upon information and belief, the various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal



property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Samsung Smartphone interconnected to the Samsung Gear S2 Smartwatch detection device and the Volkswagen Car-Net locking device”.

149. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the various Government Agencies (¶¶ 49-78), and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

150. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had

a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

151. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the ‘439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the “Samsung Smartphone interconnected to the Samsung Gear S2 Smartwatch detection device and the Volkswagen Car-Net locking device”. Samsung have created a new version of the Volkswagen app which gives you control over key features of your car directly from your smartwatch – in this instance, the Samsung Gear S2. The Gear S2, will need to be connected to a mobile device (e.g. Galaxy S6). The new app, Volkswagen Car-Net e-Remote, if you own a VW and a Gear S2, enables you to check that your car is locked with a little tinker of your smartwatch. Users will be able to lock/unlock car doors, open/close windows, control climate settings, and even find out where their car is parked from the Gear S2 smartwatch.

152. As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the Department of Homeland Security (DHS) and Samsung for the manufacture, development, commercialization, and/or use of the communication/monitoring device “Samsung Smartphone interconnected to the Samsung Gear S2 Smartwatch

detection device and the Volkswagen Car-Net locking device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**"TOUGHBOOK 31" Laptop interconnected to the  
K-Max Self-flying Helicopter**

**Count I:**

153. Upon information and belief, the U.S. Navy, the Office of Naval Research (ONR), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Panasonic "TOUGHBOOK 31" Laptop (communication device) for controlling the Lockheed Martin K-Max Unmanned Self-flying Helicopter that is equipped with the Autonomous Aerial Cargo Utility System (AACUS).

154. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Navy, the Office of Naval Research (ONR) has used for the benefit of the public, authorized the use for the benefit of the



public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

155. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

156. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent, and claims 44, 55, 45, 48, 53, and 52 of the '891 Patent as a current manufacturer, consumer, and/or user of Panasonic "TOUGHBOOK 31" Laptop (communication device) for controlling the Lockheed Martin K-Max Unmanned Self-flying Helicopter that is equipped with the Autonomous Aerial Cargo Utility System (AACUS). The Lockheed Martin K-Max unmanned helicopter is controlled from a Panasonic "TOUGHBOOK 31" Laptop as a result

of the cooperative research and development agreements to develop and commercialize the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) program. K-Max has pre-programmed load pick-ups; can fly to pre-programmed and non-pre-programmed locations; controller uses beyond-line-of-sight (BLOS) from a video camera mounted in cockpit. The K-MAX self-flying vehicle can be flown by a human sitting in the cockpit, but it cannot be completely remotely piloted; someone on ground controlling everything the helicopter does. A ground controller can, however, use satellite communication and a laptop to change the mission at any point during flight. Retrofitted Device: Autonomous Aerial Cargo/Utility System (AACUS). This is the goal of the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) program.

157. As a result of contracts with the U.S. Navy, the Office of Naval Research (ONR), Lockheed Martin and Panasonic Corporation for the development and commercialization of the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) that is controlled from a Panasonic "TOUGHBOOK 31" Laptop, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, '990, and '891 Patents.

**"TOUGHBOOK 31" Laptop / Samsung Galaxy s6 Smartphone**

**Passport Systems Inc. Base Control Unit (BCU)**

**Count 1:**

158. Upon information and belief, the US Department of Homeland Security (DHS) and the Domestic Nuclear Detection Office's (DNDO), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to

the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the 1”x2” Detection Device (DD) Samsung Galaxy s6 Smartphone; 2”x2” Detection Device (DD) Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G300 Radiation Detector Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone; and the Passport Systems Base Control Unit (BCU) "TOUGHBOOK 31" Panasonic Laptop.

159. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the US Department of Homeland Security (DHS) and the Domestic Nuclear Detection Office’s (DNDO) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

160. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the



Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

161. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 1, 2, and 4 of the '497 Patent, claims 34, and 37 of the '752 Patent, claims 13, and 14 of the '439 Patent, and claims 119, 29, 18, 118, 12, 28, 25, 20, 124, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the 1"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G300 Radiation Detector Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone; and the Passport Systems Base Control Unit (BCU) "TOUGHBOOK 31" Panasonic Laptop:

162. 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone: In response to the Domestic Nuclear Detection Office's (DNDO) BAA 09-102 Passport Systems, Inc. of Billerica, MA has developed a system of networked portable spectroscopic radiation detectors to improve the detection, localization, and identification of radiological threats.

163. 1"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone: In response to the Domestic Nuclear Detection Office's (DNDO) BAA 09-102 Passport Systems,

Inc. of Billerica, MA has developed a system of networked portable spectroscopic radiation detectors to improve the detection, localization, and identification of radiological threats.

164. NetS<sup>2</sup> SmartShield G300 Radiation Detector Samsung Galaxy s6  
Smartphone: Passport Systems Inc. G300 Radiation Detector alarms when radiation levels are detected; used as a standalone device or as part of a network; is the same size, form factor and weight as a smartphone and easily added to the belt of safety personnel; is paired with a smartphone via Bluetooth, and automatically joins a SmartShield Network. The Network Sensor System (Nets<sup>2</sup>) SmartShield G300 Radiation Detector is designed specifically for the DHS Securing-the-Cities initiative and Human Portable Tripwire program.

165. NetS<sup>2</sup> SmartShield G500 Radiation Detector Samsung Galaxy s6  
Smartphone: Passport Systems Inc. G500 Radiation Detector alarms when radiation levels are detected; used as a standalone device or as part of a network; is the same size, form factor and weight as a smartphone and easily added to the belt of safety personnel; is paired with a smartphone via Bluetooth, and automatically joins a SmartShield Network.

166. "TOUGHBOOK 31" Laptop / Passport Systems Inc. Base Control Unit (BCU): The Passport Systems "Base Control Unit" (BCU) is implemented using the Panasonic Toughbook ruggedized laptop, and in response to the Domestic Nuclear Detection Office's (DNDO) BAA 09-102 Passport Systems, Inc. has developed a system of networked portable spectroscopic radiation detectors to improve the detection, and identification of radiological threats.

167. As a result of contracts with the Domestic Nuclear Detection Office's (DNDO), Passport Systems, Inc., Panasonic Corporation, and the Samsung Group for the development and commercialization of the 1"x2" Detection Device (DD) Samsung Galaxy s6

Smartphone; 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G300 Radiation Detector Samsung Galaxy s6 Smartphone; NetS<sup>2</sup> SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone; and the Passport Systems Base Control Unit (BCU) "TOUGHBOOK 31" Panasonic Laptop the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '497, '439, 752, and '990 Patents.

### **Apple iPad Tablet interconnected to the Boeing MH-6**

#### **Little Bird Helicopter**

#### **Count I:**

168. Upon information and belief, the U.S. Navy, the Office of Naval Research (ONR), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Boeing MH-6 Little Bird helicopter controlled from an Apple iPad Tablet.

169. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Navy, the Office of Naval



Research (ONR) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

170. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

171. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent, and claims 23, 55, 27, 31, and 30 of the '891 Patent as a current manufacturer, consumer, and/or user of an Apple iPad Tablet (communication device) for controlling the Boeing MH-6 Little Bird Helicopter that is equipped with the Autonomous Aerial Cargo Utility System (AACUS). The Boeing MH-6 Little Bird helicopter is controlled from an

Apple iPad Tablet as a result of the cooperative research and development agreements to develop and commercialize the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS) program. Navy engineers developed a Carbon Monoxide Sensor package that turns any helicopter with a digital flight control system into an autonomous cargo delivery robot. An authorized person is able to land a full-size Aurora Flight Services little bird helicopter by simply touching a map application on a handheld tablet computer, said Chief of Naval Research Rear. Adm. Matthew Klunder. With an iPad the system can autonomously deliver supplies. The system is called the autonomous aerial cargo/utility system, or AACUS; a 20-year-old lance corporal was able to land a full-size Aurora Flight Services Little Bird helicopter by simply touching a map application on a handheld tablet computer.

172. As a result of contracts with the U.S. Navy, the Office of Naval Research (ONR), The Boeings Company and Apple Inc. for the development and commercialization of the Office of Naval Research's (ONR) Autonomous Aerial Cargo Utility System (AACUS), the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, '990, and '891 Patents.

### **Navy Marine Corps Intranet (NMCI) Network**

#### **Count I:**

173. Upon information and belief, the U.S. Navy and U.S. Marine Corps, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents

specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Navy Marine Corps Intranet (NMCI).

174. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Navy and U.S. Marine Corps has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

175. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems



that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

176. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 13, 14, and 15 of the '439 Patent, claim 34, of the '752 Patent, and claims 18, 118, 12, 28, 25, 20, 32, 30, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network with more than 400,000 seats for more than 800,000 user accounts; it is also a unified, flexible and functional IT platform that has become the foundation on which the Navy and Marine Corps support their broader strategic objectives. NMCI connects Sailors, Marines and Civilians in the continental U.S., Hawaii, and Japan. Navy NMCI users may begin transitioning from Blackberry devices to Apple and Samsung Android smartphones and tablets. NMCI users are now authorized to procure and use the iPhone 5s, iPhone 6, and iPhone 6 Plus smartphones, as well as the iPad Air and iPad Air 2 tablets with NMCI Email. All Navy organizations are to begin the contracting and transition process through their wireless account manager for iPhones and iPad service. Government furnished equipment (GFE). GFE includes laptops; smartphones; tablets; and a virtual desktop solution, such as "NMCI". Unlike GFE, personal devices cannot be integrated into the network's device management tools.

177. Navy Marine Corps Intranet (NMCI) Network - Apple iPad: (Claim 13)  
The Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network with more than 400,000 seats for more than 800,000 user accounts; it is also a unified, flexible and functional IT platform that has become the foundation on which the Navy and Marine Corps support their broader strategic objectives.

178. Navy Marine Corps Intranet (NMCI) Network - Samsung Galaxy s6:  
(Claim 14) The Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network with more than 400,000 seats for more than 800,000 user accounts;

179. Navy Marine Corps Intranet (NMCI) Network - Samsung Galaxy s6:  
(Claim 15) The Navy Marine Corps Intranet (NMCI) is the world's largest purpose-built network with more than 400,000 seats for more than 800,000 user accounts;

180. As a result of contracts with the U.S. Navy and U.S. Marine Corps, Apple Inc. and the Samsung Group for the development and commercialization of the Navy Marine Corps Intranet (NMCI) Network the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, 752, and '990 Patents.

### **Smartphone-Based Rapid Diagnostic Tests**

#### **Count I:**

181. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Smartphone-Based Rapid Diagnostic Tests, and the "Apple Inc.'s Electronic Communications Device".

182. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation, has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

183. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**



184. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, and claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the Smartphone-Based Rapid Diagnostic Tests: The chemical and biomolecular engineering department at the UH Cullen College of Engineering have won the National Science Foundation's Innovation Corps (I-Corps) award. The UH I-Corps team will use the \$50,000 award to develop highly sensitive rapid medical diagnostic tests that use "glow-in-the-dark" nanoparticles to signal the presence of a disease target. Using phosphorescent nanoparticles and a light-based readout allow much more sensitive, quantitative and reliable test results. Moreover, Raja said an inexpensive smartphone attachment, designed like a phone case, could be manufactured that would allow the test results to be read with the phone's built-in camera and flash. "A user would have to add the sample, such as a fingerprick quantity of blood, to a disposable test cartridge containing our nanoparticles, and then insert it into the smartphone attachment after 15 minutes. The flash from the camera will excite the luminescent particles, and the camera will capture the light emitted by them," Raja said. A smartphone app will be developed to analyze the picture captured by the camera.

185. As a result of contracts with the National Science Foundation (NSF), UH Cullen College, and Apple Inc. for the development and commercialization of the Smartphone-Based Rapid Diagnostic Tests, and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439 and '990 Patents.

#### **Variable's "NODE+Oxa" for the Apple (iPhone) Smartphone**

#### **Count I:**

186. Upon information and belief, the Department of Homeland Security (DHS) and NASA Ames Research Center, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Variable “NODE+Oxa” for the Apple (iPhone) Smartphone, and the “Apple Inc.’s Electronic Communications Device”.

187. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the Department of Homeland Security (DHS), and NASA Ames Research Center has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

188. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s

property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

189. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, and claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the Variable "NODE+Oxa" for the Apple (iPhone) Smartphone. In 2007, when the Department of Homeland Security (DHS) issued a call for a sensor that could equip a smartphone with the ability to detect dangerous gases and chemicals, NASA Ames Research Center scientist Jing Li proposal in response to DHS's Cell-All initiative was awarded funding through an interagency agreement in 2008. Li approached George Yu of Genel Systems Inc. The team settled on the iPhone, which was new at the time, and Li convinced the program manager at DHS that the sensor should be a module attached to the outside of the phone, rather than a system built into the phone's guts. After founding Variable Inc. Yu commercialize the NODE+Oxa which accurately measures the levels of carbon monoxide, nitric oxide, nitrogen dioxide, chlorine gas, sulfur dioxide, or



hydrogen sulfide in an indoor environment. It can store data or transmit it to a smartphone using Bluetooth wireless technology.

190. As a result of contracts with the Department of Homeland Security (DHS), NASA Ames Research Center, Genel Systems Inc., Variable Inc., and Apple Inc. for the development and commercialization of the Variable “NODE+Oxa” for the Apple (iPhone) Smartphone, and the “Apple Inc.’s Electronic Communications Device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439 and ‘990 Patents.

**“COINS” Nano-Embedded Sensors for Smartphones**

**Count I:**

191. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “COINS” Nano-Embedded Sensors for Smartphones, and the “Apple Inc.’s Electronic Communications Device”.

192. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the

interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

193. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

194. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, and claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the "COINS" Nano-Embedded Sensors for Smartphones: The Center of Integrated Nanomechanical Systems

(COINS) is a multidisciplinary nanoscale science and engineering center (NSEC) funded by the National Science Foundation with its headquarters at the University of California at Berkeley and satellite campuses at Stanford, Caltech, and University of California at Merced. The goal of COINS is to develop and integrate cutting-edge nanotechnologies into a versatile platform with various ultra-sensitive, ultra-selective, self-powering, mobile, wirelessly communicating detection applications; develop novel low-power, low-cost, selective nanomaterials-enable sensing systems for real-time detection of explosives, toxicants, and radiation and interface Nano-enable sensors with smart phones, eventually becoming embedded in the device.

195. As a result of contracts with the National Science Foundation (NSF), the Center of Integrated Nanomechanical Systems (COINS), the University of California at Berkeley, Stanford, Caltech, the University of California at Merced, and Apple Inc. for the development and commercialization of the “COINS” Nano-Embedded Sensors for Smartphones, and the “Apple Inc.’s Electronic Communications Device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439 and ‘990 Patents.

### **Samsung Galaxy s6 "BioPhone"**

#### **Count I:**

196. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents



specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Samsung Galaxy s6 “BioPhone”, and the “Samsung Electronic Communications Device”.

197. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

198. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems

that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

199. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, and claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the Samsung Galaxy s6 "BioPhone". The Samsung Galaxy s6 "BioPhone" smartphone can measure your heart and breathing rates, even if you're not directly touching it. Researchers at MIT are working on a project called BioPhone that derives biological signals from your smartphone's accelerometer, which they say can capture the small movements of your body that result from the beating of your heart and rising and falling of your chest. This information is useful to base medical diagnoses in real-life conditions and to help track chronic health conditions and effects of therapeutic interventions. Research is based upon work supported by the National Science Foundation (NSF CCF-1029585), Samsung, and the MIT Media Lab Consortium.

200. As a result of contracts with the National Science Foundation (NSF), Samsung Group, and the MIT Media Lab Consortium for the development and commercialization of the Samsung Galaxy s6 "BioPhone", and the "Samsung Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**"Biotouch" Samsung Galaxy s6 and the "Biotouch System" / "Nett Warrior"**

**Smartphone System**

**Count I:**

201. Upon information and belief, the U.S. Army Edgewood Chemical Biological Center (ECBC), the U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), and the Defense Threat Reduction Agency (DTRA), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Samsung Galaxy s6 "Biotouch System" / "Nett Warrior" Smartphone System, and the “Samsung Electronic Communications Device”.

202. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Army Edgewood Chemical Biological Center (ECBC), the U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), and the Defense Threat Reduction Agency (DTRA) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.



203. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

204. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 13, and 17 of the ‘439 Patent, and claims 119, 18, 118, 12, 28, 25, 20, 32, 30, 17, 108 and 124 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the "Biotouch System" / "Nett Warrior" Smartphone System: The U.S. Army developed a biological and chemical detection system. They developed volatile organic compound (VOC) strips that work with a device called a Biotouch. Biotouch relays information from VOC strips and sends results to a Nett Warrior Samsung Galaxy Note II smartphone, Defense Systems reports. Partnership between scientists and engineers at U.S. Army Edgewood Chemical Biological Center (ECBC), iSense, LLC., U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC) and the Defense Threat Reduction

Agency (DTRA). ECBC, iSense, CERDEC and DTRA work is to evaluate potential chemical/biological (CB) threats using smartphones. “The idea is to have two smartphones: the Biotouch Samsung Galaxy s6 smartphone that could test the VOC and the Nett Warrior Samsung Galaxy Note II smartphone. VOCs are postage stamp-sized, colorimetric sensor assays with 88 different indicator dyes developed by iSense LLC (Boston, MA).

205. As a result of contracts with the U.S. Army Edgewood Chemical Biological Center (ECBC), iSense, LLC., U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), the Samsung Group, and the Defense Threat Reduction Agency (DTRA) for the development and commercialization of the "Biotouch System" / "Nett Warrior" Smartphone System, and the “Samsung Electronic Communications Device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439 and ‘990 Patents.

**PositiveID / "Firefly DX" interconnected to the Samsung  
Galaxy s6 Smartphone**

**Count I:**

206. Upon information and belief, the US Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or

equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the PositiveID / "Firefly DX"; Samsung Galaxy s6 Smartphone.

207. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the US Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

208. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.



**Count II:**

209. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, and claims 18, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the PositiveID / "Firefly DX"; Samsung Galaxy s6 Smartphone: PositiveID's (PSID) M-BAND developed by MicroFluidic Systems ("MFS") subsidiary; received funding excess of \$30 million from Department of Homeland Security (DHS). Firefly DX, builds upon technology advances achieved in development of M-BAND system. Firefly Dx overview: Miniaturized version of M-BAND using same technologies, real-time PCR detection; Hand-held detection provides sample purification and biological analysis; A two-part device consisting of a portable handheld instrument with wireless communication and disposable single-use cartridges all analytical elements; Data processed in real time and communicated to PC or smartphone (e.g., Galaxy s6) using mobile applications and cloud storage; Has the ability to detect and identify common pathogens and diseases as various strains of influenza, E.coli, MRSA and human papilloma virus ("HPV").

210. As a result of contracts with the Department of Homeland Security (DHS), PositiveID Corporation, and the Samsung Group for the development and commercialization of the PositiveID / "Firefly DX"; Samsung Galaxy s6 Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**"Cell-All": Synkera MikroKera Ultra**

**Count I:**

211. Upon information and belief, the U.S. Department of Homeland Security (DHS), and NASA's Ames Research Center, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Cell-All": Synkera MikroKera Ultra.

212. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Department of Homeland Security (DHS), and NASA's Ames Research Center has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

213. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the

Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

214. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 1, 2, and 4 of the '497 Patent, claims 34 and 37 of the '752 Patent, claims 14 and 20 of the '439 Patent, and claims 119, 29, 18, 12, 28, 25, 20, 118, 17, 92, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Cell-All": Synkera MikroKera Ultra: Synkera presented the MikroKera Ultra Module at the Department of Homeland Security S&T "Cell-All" demonstration in Los Angeles on September 28, 2011. Synkera offers a general purpose digital module for evaluation and use of MikroKera Ultra chemical sensors. Synkera Technologies has been funded by DHS to develop sensors that are suitable for integration into cell phones and other ubiquitous electronic devices carried by first responders and the public at large. The DHS S&T "Cell-All" project goal is to develop sensors that can detect life-threatening gases to be incorporated into cell phones. One feature of the Synkera MikroKera Ultra is: available with or without case. The monitoring equipment for this "Cell-All" project is at least a Samsung Galaxy s6 smartphone that has an Android operating system (O/S). The Department of Homeland Security's (DHS) Science and Technology



Directorate (S&T), Cell-All aims “to equip your cell phone (e.g. Apple iPhone) with a sensor capable of detecting deadly chemicals”, says Stephen Dennis, Cell-All’s program manager. S&T pursued cooperative agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. Jing Li, a physical scientist at NASA’s Ames Research Center, developed new technology that would bring compact, low-cost, low-power, high-speed nanosensor-based chemical sensing chip which consists of 64 nanosensors and plugs into an Apple iTouch 30-pin dock connector. The new device is able to detect and identify chemicals in the air using a “sample jet” and sends detection data to another phone (e.g. Apple iPhone) or a computer via telephone communication network or Wi-Fi.

215. As a result of contracts with the U.S. Department of Homeland Security (DHS), Synkera Technologies Inc., and NASA’s Ames Research Center; cooperative agreements with Qualcomm Inc., LG Electronics, Apple Inc., and the Samsung Group for the development and commercialization of the “Cell-All”: Synkera MikroKera Ultra and a low-cost, low-power, high-speed nanosensor-based chemical sensing chip which consists of 64 nanosensors, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘497, ‘752, ‘439 and ‘990 Patents.

#### **14-A "Kromek D3S-ID": A Standalone Isotope ID**

##### **Count I:**

216. Upon information and belief, the U.S. Department of Defense (DoD) and the Defense Advanced Research Projects Agency (DARPA), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the

Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Kromek D3S- ID: A Standalone Isotope ID" and the "Samsung Electronic Communications Device".

217. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Department of Defense (DoD) and the Defense Advanced Research Projects Agency (DARPA) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

218. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of

the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

219. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 14 of the '439 Patent, claim 34 of the 752 patent, and claims 18, 118, 12, 28, 25, 20, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Kromek D3S-ID" that is interconnected to the Samsung Galaxy. Kromek announced the SIGMA programme of the Defense Advanced Research Projects Agency (DARPA), an agency of the US Department of Defense. Kromek led the design, development and supply of an advanced portable detection system for gamma and neutron radiation; combined in large networks, providing information on radiation signatures. Kromek was awarded a sole source contract for its D3S detectors. The Company has been awarded contracts worth more than \$11 million to-date under this programme. The D3S-ID - a standalone next generation isotope ID. Each one is paired with and connected to a Samsung Galaxy smartphone. The D3S-ID leverages the power of the Samsung Android technology. The Samsung Android app turns the D3S-ID into a highly capable mini Radiation Isotope Identification device (RIID). 35 isotopes representing Medical, Industrial and SNM classes.

220. As a result of contracts with the U.S. Defense Advanced Research Projects Agency (DARPA), Kromek Group plc, and Samsung for the development and commercialization of the "Kromek D3S- ID: A Standalone Isotope ID" and the "Samsung Electronic Communications Device" the United States has used, authorized the use, and



manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, '752, and '990 Patents.

**MIT: "NFC" Samsung Galaxy s6 Smartphone Sensor**

**Count I:**

221. Upon information and belief, the U.S. Army, (the United States) after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the MIT: "NFC" Samsung Galaxy s6 Smartphone Sensor.

222. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Army has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

223. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

224. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 15 of the ‘439 Patent, and claims 18, 12, 28, 25, 20, and 118 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the MIT: "NFC" Samsung Galaxy s6 Smartphone Sensor: The MIT “NFC” Smartphone sensors are made from modified near-field communication (NFC) tags. These tags, which receive the little power they need from the Samsung Galaxy s6 smartphone reading them, function as wirelessly addressable barcodes. The modified tags are referred to as CARDS: chemically actuated resonant devices. When a smartphone pings the CARD, the CARD responds only if it can receive sufficient power at the smartphone transmitted radio frequencies (RF). *Support for the Smartphone used as a stand-alone scanner: “Still, another objective of the present invention is to provide a multi sensor*

*detection and disabling lock system wherein the interchangeable detectors that comprise part of the system can be used as stand-alone scanners” (Patent No. 9,589,439 (“’439 Patent”); Col. #5; Lines 25-28). “FIG. 12 is a representative schematic view of the multi sensor detection and lock disabling system of the present invention illustrating the sequence of steps undertaken by one detector when functioning as a standalone scanner for detecting an agent or compound” (Patent No. 9,589,439 (“’439 Patent”); Col. #6; Lines 26-30). “As shown in FIGS. 1, 2 and 9-13, the multi sensor detection and lock disabling system 10 includes a plurality of detectors 46 with each detector 46 adapted for and set up to sample for a specific agent or compound (biological, chemical, or radiological); and the detectors 46 are interchangeable for adapting to the needs and demands of future technology. The detectors 46 can also be used as standalone scanners.” (Patent No. 9,589,439 (“’439 Patent”); Col. #9; Lines 54-56). “The detector 46 functions as a stand-alone scanner and can be wirelessly interconnected...” (Patent No. 9,589,439 (“’439 Patent”); Col. #9; Lines 54-56).*

225. MIT's research was funded by the U.S. Army Research Laboratory and the U.S. Army Research Office. This invention was made with government support under Contract No. W911NF-07-D-0004 awarded by the Army Research Office. The government has certain rights in the invention. MIT Patent App. No. 14/528,856

226. As a result of contracts with the U.S. Army Research Laboratory (ARL), the U.S. Army Research Office (ARO), Massachusetts Institute of Technology (MIT), and the Samsung Group for the development and commercialization of the MIT: "NFC" Samsung Galaxy s6 Smartphone Sensor the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.



**NRL: SIN-VAPOR / Smartphone System**

**Count I:**

227. Upon information and belief, the U.S. Navy and the U.S. Naval Research Laboratory (NRL), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the NRL: SIN-VAPOR / Smartphone System.

228. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Navy and the U.S. Naval Research Laboratory (NRL) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

229. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the

Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

230. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 16 of the ’439 Patent, and claims 118, 18, 122, 124, and 108 of the ’990 Patent as a current manufacturer, consumer, and/or user. By using easily produced super-small components, the devices potentially can be installed in a variety of devices, such as smartphones, robots or commercial appliances. Another goal is to install a sensor on a Google Nexus 7 tablet computer and conduct some wireless sensor networking. The NRL: SIN-VAPOR / Smartphone System: Developed by the U.S. Naval Research Laboratory (NRL) in Washington, D.C.; the silicon nanowires in a vertical array with a porous electrode (SiN-VAPOR) sensor: In addition to detecting chemical weapons or explosives, the sensor can be used for identifying biological agents Dr. Christopher Field, the lead NRL scientist on the SiN-VAPOR research team is working with the NRL’s biological research group to apply the sensor in this area.

231. As a result of contracts with the U.S. Naval Research Laboratory (NRL), Google, Samsung Group and Apple Inc. for the development and commercialization of the NRL: SIN-VAPOR / Smartphone System the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

### **iPhone "Biodetector" Smartphone**

#### **Count I:**

232. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the iPhone "Biodetector" Smartphone, and the "Samsung Electronic Communications Device".

233. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent



from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

234. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

235. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 16, of the '439 Patent, and claims 118, 18, 122, 124, and 108 of the '990 Patent as a current manufacturer, consumer, and/or user of the iPhone "Biodetector" Smartphone: Pro. Brian T. Cunningham, University of Illinois has won a \$300,000 National Science Foundation grant for research into turning smartphones into biodetectors. The biodetectors used in counterterrorism fall into three broad categories: biochemical systems detecting a DNA sequence or protein unique to the bioagent through interaction with a test molecule; tissue-based systems, in which a bioagent or toxic chemical affect living mammalian

cells, causing them to undergo some measurable response; and chemical mass spectrometry systems, which break samples down into their chemical components whose weights are then compared to those of known biological or chemical agents.

236. As a result of contracts with the National Science Foundation (NSF) and the University of Illinois for the development and commercialization of the iPhone "Biodetector" Smartphone, and the "Samsung Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439 and '990 Patents.

**FLIR: identiFINDER R300 / Smartphone System**

**Count I:**

237. Upon information and belief, the Defense Threat Reduction Agency (DTRA), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the FLIR: identiFINDER R300 / Smartphone System.

238. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the

actions and conduct of its agents, including at least that of the Defense Threat Reduction Agency (DTRA) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

239. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

## **Count II:**

240. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 16 of the '439 Patent, and claims 118, 18, 122, 124, and 108 of the '990 Patent as a current manufacturer, consumer, and/or user of the FLIR: identiFINDER R300 / Smartphone System: FLIR Systems, Inc. announced on June 16, 2011 that the Defense Threat Reduction Agency (DTRA) has awarded it a \$1.1 million contract for a multi-year, multi-



phase research and development contract to develop a mobile, ruggedized stand-off radiation detection system with identification capabilities. “FLIR has developed a radiation detection and identification device and is manufacturing the world’s leading handheld radio-isotope identifier, the identiFINDER,” said William Sundermeier, president of FLIR Detection and Protection. In particular, the FLIR identiFINDER R300 will identify threat objects. A threat object is radioactive material whose signature is that of material used for terrorist purposes. Threat materials are usually those used in a nuclear explosive devices or in Radiological Dispersive Devices (“Dirty” bombs). The device qualifies as a detector case with features of multiple sensors, internet and GPS connection.

241. As a result of contracts with the Defense Threat Reduction Agency (DTRA) and FLIR Systems for the development and commercialization of the Navy Marine Corps Intranet (NMCI) Network the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

### **"VOCKET System" / "Nett Warrior" Smartphone System**

#### **Count I:**

242. Upon information and belief, the U.S. Army, and the U.S. Army Edgewood Chemical Biological Center (ECBC), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications

and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "VOCKET System" / "Nett Warrior" Smartphone System.

243. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Army and the U.S. Army Edgewood Chemical Biological Center (ECBC) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

244. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems

that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

245. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 17 of the '439 Patent, and claims 119, 17, 18, 124 and 108 of the '990 Patent as a current manufacturer, consumer, and/or user of the "VOCKET System" / "Nett Warrior" Smartphone System: The Army's Edgewood Chemical Biological Center (ECBC) researchers are refining for Army use a commercial technology that will allow soldiers to accurately and rapidly detect an array of chemical and biological hazards - from mustard agent to anthrax. The VOCKET system is a small electronic device developed at ECBC and even manufactured there, for now, on the center's 3D printers. The device reads the result of chemical detection paper and transmit the results into the Army's network via the soldier-worn "Nett Warrior" smartphone system. The "Nett Warrior" system is a Samsung Galaxy Note II smartphone.

246. As a result of contracts with the , U.S. Army Edgewood Chemical Biological Center (ECBC), and the Samsung Group for the development and commercialization of the "VOCKET System" / "Nett Warrior" Smartphone System the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**GammaPix for Android Smartphones**

**Count I:**

247. Upon information and belief, the U.S. Department of Defense (DoD) and the Defense Advanced Research Projects Agency (DARPA), (the United States), after several



notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the GammaPix for Android Smartphones.

248. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Department of Defense (DoD) and the Defense Advanced Research Projects Agency (DARPA) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

249. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had

a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

250. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 17 of the ‘439 Patent, and claims 119, 17, 18, 124, and 108 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the GammaPix for Android Smartphones: GammaPix for Android Smartphones (e.g. Samsung Galaxy s6) scans for radiation using a smartphone camera sensor. Scanning for radiation and radioactive explosives the camera looks for a particular ‘signature’ left behind by gamma rays. It measures the rate at which rays hit the lens to determine radiation levels. App detects radiation in planes, hospitals, contaminated items and more. It was created by Connecticut-based developers Image Insight under a \$679,000 contract with the U.S. Defense Advanced Research Projects Agency (DARPA).

251. As a result of contracts with the U.S. Defense Advanced Research Projects Agency (DARPA), Samsung Group, and Image Insight for the development and commercialization of the GammaPix for Android Smartphones the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**MultiRae Pro Wireless Portable Multi Threat Radiation and  
Chemical Detector**

**Count I:**

252. Upon information and belief, the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), US Marine Corps, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the MultiRae Pro Wireless Portable Multi Threat Radiation and Chemical Detector.

253. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), US Marine Corps has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.



254. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

255. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 17 of the ‘439 Patent, and claims 119, 79, 124, and 78 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the MultiRae Pro Wireless Portable Multi Threat Radiation and Chemical Detector: RAE Systems was awarded a five-year contract by the Environmental Protection Agency (EPA) for its MultiRAE Pro monitors. The Federal Emergency Management Agency (FEMA) has also adopted the MultiRAE Pro monitor to its Urban Search and Rescue (US&R) equipment cache. Description: The RAE Systems MultiRAE Pro is a CBRN multithread detection tool that combines continuous monitoring capabilities for radiation and combustible gases. The MultiRAE Pro can be configured with 33 intelligent sensors to fully meet the monitoring needs of applications such as HazMat response,

CBRN/TIC/TIM detection, EOD, homeland security, and civil defense. Mission: The MultiRAE Pro provides a handheld multi-gas sensor with 5 sensor channels that can detect toxic or hazardous vapors: Users; US Marine Corps. The MultiRae Pro qualifies as a multi sensor detector case that has interchangeable sensors; a battery power source; an internet connection, and, a GPS connection.

256. As a result of contracts with the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), US Marine Corps, and RAE Systems for the development and commercialization of the MultiRae Pro Wireless Portable Multi Threat Radiation and Chemical Detector the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

### **EAGER: Mobile-Phone Based Single Molecule Imaging of DNA**

#### **Count I:**

257. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "EAGER: Mobile-phone based single molecule imaging of DNA to analyze copy-number variations in genome", and the "Apple Inc.'s Electronic Communications Device".

258. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

259. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**



260. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "EAGER: Mobile-phone based single molecule imaging of DNA to analyze copy-number variations in genome." The National Science Foundation awards a grant of \$299,995 to University of California, Los Angeles...This project is under the direction of Aydogan Ozcan...This award starts October 1, 2014 and ends September 30, 2016...Award:1444240...PI Name: Ozcan, Aydogan...Award Date: June 13, 2014...a transformative fluorescent microscopy system that is integrated onto a mobile-phone for imaging of single DNA molecules...field-portable imagine interface running on a smart-phone...will initially utilize state-of-art mobile phones...

261. As a result of contracts with the National Science Foundation, the University of California, Los Angeles and Apple Inc. for the development and commercialization of the "EAGER: Mobile-phone based single molecule imaging of DNA to analyze copy-number variations in genome" and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

## **INSPIRE Track 2: Public Health Nanotechnology and**

### **Mobility (PHeNoM)**

#### **Count I:**

262. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment

Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “INSPIRE Track 2: Public Health, Nanotechnology, and Mobility (PHeNoM)”, and the “Apple Inc.’s Electronic Communications Device”.

263. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

264. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of

the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

265. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "INSPIRE Track 2: Public Health, Nanotechnology, and Mobility (PHeNoM)", The National Science Foundation hereby awards a grant of \$3,000,000 to Cornell University... This project is under the direction of David C. Erickson, Aydogan Ozcan, Saurabh Mehta, Deborah Estrin, Tanzeem Choudhury... This award starts August 15, 2014 and ends July 31, 2019... Award: 1343058... PI Name: Erickson, David... Award Date... August 11, 2014... first demonstrate that this roadblock to the deployment of lab-on-chip technology can be fundamentally altered by taking advantage of the now ubiquitous installed base of smartphone technology...

266. As a result of contracts with the National Science Foundation, the Cornell University and Apple Inc. for the development and commercialization of the "INSPIRE Track 2: Public Health, Nanotechnology, and Mobility (PHeNoM)", and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**PFI:BIC Human-Centered Smart-Integration of Mobile**

**Imaging and Sensing**



**Count I:**

267. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “PFI: BIC Human-Centered Smart-Integration of Mobile Imaging and Sensing Tools with Machine Learning for Ubiquitous Quantification of Waterborne and Airborne Nanoparticles”, and the “Apple Inc.’s Electronic Communications Device”.

268. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

269. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the

Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

270. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the ’439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the ’990 Patent as a current manufacturer, consumer, and/or user of the “PFI: BIC Human-Centered Smart-Integration of Mobile Imaging and Sensing Tools with Machine Learning for Ubiquitous Quantification of Waterborne and Airborne Nanoparticles.” The National Science Foundation hereby awards a grant of \$1,000,000 to University of California, Los Angeles...This project is under the direction of Aydogan Ozcan, Mihaela van der Schaar...This awards starts October 1, 2015 and ends September 30, 2018...Award: 1533983...PI Name: Ozcan, Aydogan...Award Date: August 6, 2015... Another approached that will be implemented is the development of highly sensitive multi-modal (e.g. multi-color fluorescence & dark-field) mobile-phone based microscopy platforms for distributed nanoparticle imaging and sensing.

271. As a result of contracts with the National Science Foundation, the University of California, Los Angeles and Apple Inc. for the development and commercialization of the “PFI: BIC Human-Centered Smart-Integration of Mobile Imaging and Sensing Tools with Machine Learning for Ubiquitous Quantification of Waterborne and Airborne Nanoparticles”, and the “Apple Inc.’s Electronic Communications Device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**EFRI-BioFlex: Cellphone-Based Digital Immunoassay Platform**

**Count I:**

272. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “EFRI – BioFlex: Cellphone-based Digital Immunoassay Platform”, and the “Apple Inc.’s Electronic Communications Device”.

273. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the



actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

274. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

275. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "EFRI – BioFlex: Cellphone-based Digital Immunoassay Platform for High-throughput Sensitive and Multiplexed Detection and Distributed Spatio-Temporal Analysis of Influenza, "The National Science

Foundation hereby awards a grant of \$2,000,000 to University of California, Los Angeles...This project is under the direction of Aydogan Ozcan, Dino Di Carlo, Omai B. Garner, Michael Lewinski...This award is effective September 1, 2013 and expires August 31, 2017...Award: 1332275...PI Name: Ozcan, Aydogan...Award Date: July 16, 2013...field-portable telemedicine platform...as well as cellphone based multi-spectral fluorescent cytometry and computational microscopy tools...

276. As a result of contracts with the National Science Foundation, the University of California, Los Angeles and Apple Inc. for the development and commercialization of the “EFRI – BioFlex: Cellphone-based Digital Immunoassay Platform for High-throughput Sensitive and Multiplexed Detection and Distributed Spatio-Temporal Analysis of Influenza”, and the “Apple Inc.’s Electronic Communications Device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**“Multimode Smartphone Biosensor”**

**Count I:**

277. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed

inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Multimode Smartphone Biosensor”, and the “Apple Inc.’s Electronic Communications Device”.

278. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

279. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.



**Count II:**

280. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Multimode Smartphone Biosensor". The National Science Foundation hereby awards a grant of \$600,000 to the Board of Trustees of the University of Illinois at Urbana – Champaign...This project is under the direction of Brian Cunningham, Steven S. Lumetta ...This award is effective June 1, 2013 and expires May 31, 2016...Award: 1264377...PI Name: Cunningham, Brian...Award Date...January 14,????...We plan to integrate four of the most commonly used detection modalities for diagnostic assays into a handheld cradle that interfaces with a smartphone.

281. As a result of contracts with the National Science Foundation, the University of Illinois at Urbana – Champaign and Apple Inc. for the development and commercialization of the "Multimode Smartphone Biosensor", and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**EAGER: Lab-in-a-Smartphone****Count I:**

282. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter

as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "EAGER: Lab-in-a-Smartphone", and the "Apple Inc.'s Electronic Communications Device".

283. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

284. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems

that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

285. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "EAGER: Lab-in-a-Smartphone". The National Science Foundation hereby awards a grant of \$300,000 to the Board of Trustees of the University of Illinois at Urbana – Champaign...This project is under the direction of Brian Cunningham, John Dallesasse...This award starts September 1, 2014 and ends August 31, 2016...Award: 1447893...PI Name: Cunningham, Brian...Award Date: July 3, 2014...an inexpensive approach for integrating sophisticated laboratory analytical tools into smartphones and other mobile devices through custom cradles, circuit boards, or sensors that must be adapted to specific models of phones/tablets...

286. As a result of contracts with the National Science Foundation, the University of Illinois at Urbana – Champaign and Apple Inc. for the development and commercialization of the "EAGER: Lab-in-a-Smartphone", and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**PFI-BIC "Pathtracker: Smartphone-based for Mobile**

**Infectious Disease Detection**

**Count I:**



287. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “PFI:BIC – Pathtracker: A smartphone-based system for mobile infectious disease detection and epidemiology”, and the “Apple Inc.’s Electronic Communications Device”.

288. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

289. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the

Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

290. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "PFI:BIC – Pathtracker: A smartphone-based system for mobile infectious disease detection and epidemiology". The National Science Foundation hereby awards a grant of \$999,995 to the Board of Trustees of the University of Illinois at Urbana – Champaign... This project is under the direction of Brian Cunningham, Ian S. Brooks, Rashid Bashir, David Hirschberg, and Steven S. Lumetta... This award starts September 1, 2015 and ends August 31, 2018... Award: 1534126... PI Name: Cunningham, Brian... Award Date: August 22, 2016... will develop a mobile sensor technology for performing detection and identification of viral and bacterial pathogens through a smartphone-based detection instrument...

291. As a result of contracts with the National Science Foundation, the University of Illinois at Urbana – Champaign and Apple Inc. for the development and commercialization of the "PFI:BIC – Pathtracker: A smartphone-based system for mobile

infectious disease detection and epidemiology”, and the “Apple Inc.’s Electronic Communications Device”, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, and ‘990 Patents.

**I-Corps: Ultra-Sensitive Lateral Flow Reporters /  
Lab-on-Phone Platform**

**Count I:**

292. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “I-Corps: Nanophosphors as Ultra-Sensitive Lateral Flow Reporters in a Lab-on-Phone Platform”, and the “Apple Inc.’s Electronic Communications Device”.

293. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared



intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

294. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

## **Count II:**

295. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "I-Corps: Nanophosphors as Ultra-Sensitive Lateral Flow Reporters in a Lab-on-Phone Platform". The National Science Foundation hereby awards a grant of \$50,000 to University of Houston...This project is under the direction of Richard Wilson...This award starts August 1, 2014 and ends January 31, 2015...Award: 1450552...PI Name: Wilson, Richard...Award Date: July 25,

2014...ultrasensitive and quantitative measurement of analytic levels from complex samples through LFTs that use only a cell phone's built-in optics and an inexpensive (a few dollars) plastic attachment for readout...

296. As a result of contracts with the National Science Foundation, the University of Houston, and Apple Inc. for the development and commercialization of the "I-Corps: Nanophosphors as Ultra-Sensitive Lateral Flow Reporters in a Lab-on-Phone Platform", and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

### **Smartphone (iPhone) Microscope**

#### **Count I:**

297. Upon information and belief, the U.S. Army Research Office, the National Science Foundation, the National Institutes of Health, and the Office of Naval Research, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Smartphone (iPhone) Microscope", and the "Apple Inc.'s Electronic Communications Device".

298. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a

public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Army Research Office, the National Science Foundation, the National Institutes of Health, and the Office of Naval Research, has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

299. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

## **Count II:**

300. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 17, 92, 25, 12, 124,



and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Smartphone (iPhone) Microscope". Aydogan Ozcan, a professor at UCLA and his team have created a portable smartphone attachment that can be used to perform sophisticated field testing to detect viruses and bacteria. Funding support for the Ozcan Research Group comes from the Army Research Office, the National Science Foundation, the National Institutes of Health, and the Office of Naval Research. Commercialize through Holomic LLC.

301. As a result of contracts with the U.S. Army Research Office, the National Science Foundation, the National Institutes of Health, and the Office of Naval Research, Holomic LLC and Apple Inc. for the development and commercialization of the "Smartphone (iPhone) Microscope", and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

### **Smartphone (iPhone) Biosensor "Cradle"**

#### **Count I:**

302. Upon information and belief, the National Science Foundation, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the

Smartphone (iPhone) Biosensor "Cradle", and the "Apple Inc.'s Electronic Communications Device".

303. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

304. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

305. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the Smartphone (iPhone) Biosensor "Cradle": University of Illinois researchers developed a cradle and app for the iPhone to make a handheld biosensor that uses the phone's own camera and processing power to detect any kind of biological molecules or cells. At the heart of the iPhone biosensor is a photonic crystal. When anything biological attaches to the photonic crystal - such as protein, cells, pathogens or DNA - the reflected color will shift. The group received a grant from the National Science Foundation (NSF) to expand the range of biological experiments that can be performed with the iPhone.

306. As a result of contracts with the National Science Foundation (NSF), University of Illinois, and Apple Inc. for the development and commercialization of the Smartphone (iPhone) Biosensor "Cradle", and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**AOptix Stratus MX Peripheral for the Apple (iPhone) Smartphone**

**Count I:**

307. Upon information and belief, the U.S. Department of Defense (DoD), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter



as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the AOptix Stratus MX Peripheral for the Apple (iPhone) Smartphone.

308. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Department of Defense (DoD) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

309. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems

that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

310. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the '990 Patent as a current manufacturer, consumer, and/or user of the AOptix Stratus MX Peripheral for the Apple (iPhone) Smartphone: The biometrics company AOptix announced on Wednesday, February 13, 2013 that the Pentagon has awarded it, along with CACI International Inc., a \$3 million research contract to develop AOptix's Smart Mobile Identity devices for the US Department of Defense. As Wired reported, a hardware peripheral and software suite that turns a regular Apple iPhone smartphone into a device that scans and transmits data at distances not possible for current scanning technology. AOptix's hardware is a peripheral that wraps around a smartphone, so that it can record biometric data. AOptix executive Joey Pritikin told Wired, "this new gadget will be able to scan faces at up to two meters away, irises from one meter, and voice from within a typical distance from a phone. Thumbprints will still require scanning against the phone's glass face". Biometrics, also known as biostatistics or biometry, in biology, the development and application of statistical and mathematical methods to the analysis of data resulting from biological observations and phenomena.

311. As a result of contracts with the U.S. Department of Defense (DoD), AOptix Technologies, CACI International Inc. and Apple Inc. for the development and commercialization of the AOptix Stratus MX Peripheral for the Apple (iPhone) Smartphone the

United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**PositiveID - Boeing / M-Band interconnected to the  
Apple (iPhone) Smartphone**

**Count I:**

312. Upon information and belief, the US Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the PositiveID - Boeing / "M-Band"; Apple (iPhone) Smartphone.

313. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the US Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.



314. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

315. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the ‘439 Patent, and claims 118, 17, 92, 25, 12, 124, and 99 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the PositiveID - Boeing / "M-Band"; Apple (iPhone) Smartphone: PositiveID’s (PSID) M-BAND was developed by the Company's MicroFluidic Systems ("MFS") subsidiary, which received funding in excess of \$30 million from the Department of Homeland Security (DHS). M-BAND is positioned to capitalize on BioWatch Generation 3, the U.S. Government’s \$3.1 billion program to detect the release of pathogens into the air as part of a defense against potential terrorist attacks on major American cities. In Dec. 2012, PSID entered into an exclusive license agreement with The Boeing Company (“Boeing”). Boeing paid PSID \$2.5 million; exclusive distributor of M-BAND

for BioWatch Gen-3. M-Band is a bio-aerosol monitor with fully integrated systems for sample collection, processing and detection modules that continuously analyze air samples for the detection of bacteria, viruses, and toxins and transmit the results to smartphones (e.g. Apple iPhone), or other devices, every three hours.

316. As a result of contracts with the Department of Homeland Security (DHS), PositiveID Corporation, the Boeings Company, and Apple Inc. for the development and commercialization of the PositiveID - Boeing / "M-Band"; Apple (iPhone) Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

**Samsung Galaxy s6 "Microscope" Smartphone**

**Count I:**

317. Upon information and belief, the U.S. Army, and the U.S. Army Edgewood Chemical Biological Center (ECBC), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Samsung Galaxy s6 "Microscope" Smartphone.

318. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a

public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Army and the U.S. Army Edgewood Chemical Biological Center (ECBC) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

319. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

## **Count II:**

320. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 19 of the '439 Patent, and claims 118, 17, 92, 25, 12, 124 and



99 of the '990 Patent as a current manufacturer, consumer, and/or user of the Samsung Galaxy s6 "Microscope" Smartphone. The U.S. Army Edgewood Chemical Biological Center (ECBC) is developing cellphone-based wide-field fluorescent imaging of microbeads for pathogen detection. Scientists at ECBC worked with a team at the University of California, Los Angeles (UCLA), to adapt its prototype of a plastic, clip-on "microscope" to fit a Samsung Galaxy Android phone, commonly used by the Army. This device clips directly over the camera of the Smartphone and operates just like a microscope. The UCLA team is developing the hardware and the software for the device, with ECBC's team providing the diagnostic and detection assays that it will utilize. The team is focused on biological diagnostic tests. ECBC has also partnered with Holomic, LLC, and a small business in California.

321. As a result of contracts with the , U.S. Army Edgewood Chemical Biological Center (ECBC), Samsung Group, and Holomic LLC for the development and commercialization of the Samsung Galaxy s6 "Microscope" smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

### **"Kromek D3S-NET": Apple iPhone**

#### **Count I:**

322. Upon information and belief, the U.S. Department of Defense (DoD) and the Defense Advanced Research Projects Agency (DARPA), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in

the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Kromek D3S-NET" and the "Apple Inc.'s Electronic Communications Device".

323. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Department of Defense (DoD) and the Defense Advanced Research Projects Agency (DARPA) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

324. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way

of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

325. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Kromek D3S-NET" that is interconnected to the Apple iPhone. Kromek announced the SIGMA programme of the Defense Advanced Research Projects Agency (DARPA), an agency of the US Department of Defense. Kromek led the design, development and supply of an advanced portable detection system for gamma and neutron radiation; combined in large networks, providing information on radiation signatures. Kromek was awarded a sole source contract for its D3S detectors. The Company has been awarded contracts worth more than \$11 million to-date under this programme. The D3S is currently available in two versions: D3S-NET – a blind detector forming part of a covert integrated monitoring network; the other, D3S-ID - a standalone next generation isotope ID. DARPA test network of 1,000 D3S-NET radiation detectors in Washington. Each one is connected to a smartphone, which is used to build up a mesh network with all the other sensors. D3S-NET: multiple detectors and locations; paired with smartphone; fixed and mobile sensors; and continuously mapping radiation levels.

326. As a result of contracts with the U.S. Defense Advanced Research Projects Agency (DARPA), Kromek Group plc, and Apple Inc. for the development and commercialization of the "Kromek D3S-NET" and the "Apple Inc.'s Electronic Communications



Device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, 752, and ‘990 Patents.

**Biomeme “two3” Mobile Thermocycler: Apple iPhone**

**Count I:**

327. Upon information and belief, the U.S. Department of Army (DOA); Edgewood Chemical and Biological Center (ECBC), (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Biomeme two3 Mobile Thermocycler” and the “Apple Inc.’s Electronic Communications Device”.

328. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Department of Army (DOA); Edgewood Chemical and Biological Center (ECBC) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal

property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

329. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

330. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Biomeme two3 Mobile Thermocycler" that is interconnected to the Apple iPhone. May 11, 2016: In a recent job notice on its website, med tech startup Biomeme announced it's working on a multimillion dollar contract with the U.S. government. The Biomeme two3™ is a mobile thermocycler for real-time linear probe polymerase chain reaction (PCR), isothermal and RT-PCR analysis of DNA or RNA. Designed to bring cutting-edge laboratory technology into a field

ready, smartphone-based device, the two3™ is capable of multiplexed detection of six nucleic acid targets per run. Reactions prepared in Biomeme Test Kits are placed into the two3™ for analysis. Detection category is Biological; Data Analysis Support Equipment is the iPhone; Communications Interface is Cellular or Wi-Fi connection; Biological Targets are Nucleic acids, *Chlamydia trachomatis*, *Neisseria gonorrhoeae* (Gonorrhea), and *Trichomonas vaginalis*. Satellite, wireless and wired connections are available. Device or system is intended for multiple detection assays. Biomeme's platform turns any smartphone or like device (iPod Touch, iPad Mini, etc.) into a mobile lab for performing advanced diagnostics. The system requires no special lab equipment or experience and can be used at the point of need in the field or in a mobile lab. The full system includes a hardware add-on, a mobile device software application, and disposable test kits. The system performs molecular diagnostics and near real-time surveillance of pathogens via real-time quantitative polymerase chain reaction (qPCR). In addition to Biomeme's tests, the platform is open enough for experienced users in analytical and diagnostic laboratories to develop their own tests for use on the system. Real time hydrolysis probe polymerase chain reaction amplification of genetic material on a smartphone or like device (iPod Touch, iPad Mini) hardware add-on thermal cycler.

331. As a result of contracts with the U.S. Department of Army (DOA); Edgewood Chemical and Biological Center (ECBC), Biomeme Inc., and Apple Inc. for the development and commercialization of the “Biomeme two3 Mobile Thermocycler” and the “Apple Inc.’s Electronic Communications Device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, 752, and ‘990 Patents.

**Smartphone-operated “LAMP box”: Apple iPhone**



**Count I:**

332. Upon information and belief, the U.S. Department of Energy's National Nuclear Security Administration, the Sandia National Laboratory, and the National Institute of Allergy and Infectious Disease, after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Smartphone-operated LAMP box" and the "Apple Inc.'s Electronic Communications Device".

333. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Department of Energy's National Nuclear Security Administration, the Sandia National Laboratory, and the National Institute of Allergy and Infectious Disease has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

334. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

335. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the ‘439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the “Smartphone-operated LAMP box” that is interconnected to the Apple iPhone. The U.S. Department of Energy’s National Nuclear Security Administration under Contract DE-AC04-94AL85000, Lockheed Martin Corporation, the Sandia National Laboratories’ Laboratory Directed Research and Development (LDRD) program (Project# 173111, PI: Meagher and Project# 190245)), and by a grant from the National Institute of Allergy and Infectious Disease (NIAID grant 1R21AI120973, PI: Meagher), and Apple Inc. has developed a smartphone-based diagnostic platform for rapid detection of Zika, chikungunya, and dengue

viruses. The smartphone LAMP box performs comparably to benchtop thermal cyclers both in terms of sensitivity and the ability to detect ZIKV directly in a human bodily fluid matrix. The smartphone employs a novel algorithm utilizing chromaticity to analyze fluorescence signals, which improves the discrimination of positive/negative signals by 5-fold when compared to detection with traditional RGB intensity sensors or the naked eye. The ability to detect ZIKV directly from crude human sample matrices (blood, urine, and saliva) demonstrates our device's utility for widespread clinical deployment.

336. As a result of contracts with the U.S. Department of Energy's National Nuclear Security Administration, the Sandia National Laboratory, the National Institute of Allergy and Infectious Disease, the Lockheed Martin Corporation, and Apple Inc. for the development and commercialization of the "Smartphone-operated LAMP box" and the "Apple Inc.'s Electronic Communications Device" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, 752, and '990 Patents.

### **Alluviam LLC HazMasterG3: Apple iPhone**

#### **Count I:**

337. Upon information and belief, the General Services Administration (GSA), the US Army Joint Battle Command, and the Department of Homeland Security (DHS), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications



and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Alluviam LLC HazMasterG3” and the “Apple Inc.’s Electronic Communications Device”.

338. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the General Services Administration (GSA), the US Army Joint Battle Command, and the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

339. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems

that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

340. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Alluviam LLC HazMasterG3" that is interconnected to the Apple iPhone. Alluviam's HazMat/chemical, biological, radiological, nuclear, explosive (CBRNE) Decision Support System, has been recently awarded a Federal Supply Schedule contract from the General Services Administration (GSA), simplifying procurement for federal agencies and other customers with authorization to purchase from the Federal Supply System. HazMasterG3 integrates 167,000+ chemical, biological, radiological agents, trade names, explosives and IED's with extensive threat identification capabilities. HazMasterG3 has a larger database than any other integrated CBRNE decision support system – and the only one with full capabilities whether running on one of today's handheld devices (choose from Windows Mobile, Android or iOS), HazMasterG3 is the first, and only, CBRNE/HME/IED decision support system to support iOS, Android, Windows Mobile, MS-Windows and Linux, whether on a smartphone, tablet, laptop or net-centric environment. HazMasterG3 is the only commercially available system that is both US Army Joint Battle Command Platform-Handheld (JBCP-H) compatible and is certified as a DHS approved product for homeland security.

341. As a result of contracts with the General Services Administration (GSA), the US Army Joint Battle Command, and the Department of Homeland Security (DHS), Alluviam LLC, and Apple Inc. for the development and commercialization of the "Alluviam

LLC HazMasterG3” and the “Apple Inc.’s Electronic Communications Device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, 752, and ‘990 Patents.

**FePhone Point-of-Care: Apple iPhone**

**Count I:**

342. Upon information and belief, the Department of Defense (DoD), Defense Health Program, after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “FePhone Point-of-Care” and the “Apple Inc.’s Electronic Communications Device”.

343. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the Department of Defense (DoD), Defense Health Program has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as



described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

344. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

345. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "FePhone Point-of-Care" that is interconnected to the Apple iPhone. The Department of Defense (DoD), Defense Health Program under the Small Business Innovation Research (SBIR) Program, issued an award to Cornell University's Li Jiang under contract No. W81XWH-16-C-0082 in the amount of \$149,973.00 dollars for the development of the FePhone Point-of-Care" that is interconnected to the Apple iPhone. FePhone Point-of-Care Iron Stratus Determination

Enable by Mobile Technology. VitaMe Technologies Inc. and Cornell University will develop the FePhone - a point-of-care diagnostic system for iron status determination. The FePhone comprises of (1) a test cartridge which accepts the blood sample and performs the test, (2) a TidBit reader a custom portable hardware system developed by Cornell which operates the test, and (3) a mobile app which provides step-by-step instructions for performing the test, communicates with the TidBit, interprets the test outcomes, and provides the desired OK, Iron Deficiency, or Iron Deficiency Anemia result to the operator. VitaMe Technologies, Inc. of Ithaca, NY, is a start-up company founded in October 2012 by Matt Mancuso (CEO) and Prof. David Erickson (Chairman). The focus of the company is to commercialize smartphone based micronutrient analysis technology developed in the Erickson lab at Cornell University.

346. As a result of contracts with the Department of Defense (DoD), Defense Health Program, Cornell University, and Apple Inc. for the development and commercialization of the “FePhone Point-of-Care” and the “Apple Inc.’s Electronic Communications Device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, 752, and ‘990 Patents.

### **NutriPhone Lab-on-a-Chip: Apple iPhone**

#### **Count I:**

347. Upon information and belief, the National Science Foundation (NSF), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents

specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “NutriPhone Lab-on-a-Chip” and the “Apple Inc.’s Electronic Communications Device”.

348. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Science Foundation (NSF) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

349. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems



that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

350. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "NutriPhone Lab-on-a-Chip" that is interconnected to the Apple iPhone. Cornell University's David Erickson, a mechanical engineer, and Saurabh Mehta, a physician and nutrition researcher, who focused on bringing people around the world better health and well-being – all in a smartphone device. Their NutriPhone combines nanofabricated "lab-on-a-chip" technology with new smartphone apps to monitor users' nutrition, blood and stress. NutriPhone is currently funded by a five-year, \$3 million National Science Foundation grant. The team focused on developing three specific smartphone applications for nutrition, blood and stress. In addition, the researchers are creating a small device that fits over the smartphone's powerful megapixel camera, which can analyze small blood samples from test strips. NutriPhone is a smartphone based micronutrient testing system that utilizes camera phones to analyze blood results for Vitamin B12, D, cholesterol, and other health markers.

351. As a result of contracts with the National Science Foundation (NSF), Cornell University, and Apple Inc. for the development and commercialization of the "NutriPhone Lab-on-a-Chip" and the "Apple Inc.'s Electronic Communications Device" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, 752, and '990 Patents.

**FeverPhone: Apple iPhone**

**Count I:**

352. Upon information and belief, the National Institutes of Health's (NIH) National Institute of Biomedical Imaging and Bioengineering, after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "FeverPhone" and the "Apple Inc.'s Electronic Communications Device".

353. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Institutes of Health's (NIH) National Institute of Biomedical Imaging and Bioengineering has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

354. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the

Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

355. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the ‘439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the ‘990 Patent as a current manufacturer, consumer, and/or user of the “FeverPhone” that is interconnected to the Apple iPhone. Cornell University’s David Erickson, a mechanical engineer, and Saurabh Mehta, a physician and nutrition researcher. The National Institutes of Health’s (NIH) National Institute of Biomedical Imaging and Bioengineering has awarded to Cornell a four-year, \$2.3 million grant to develop FeverPhone, which will diagnose six febrile diseases in the field: dengue, malaria, chikungunya, typhoid fever, leptospirosis and Chagas’ disease. FeverPhone – hardware and software, working in combination with a smartphone or tablet – will provide a real-time, rapid and accurate diagnosis using a drop of blood to differentiate and identify specific pathogens. While the Zika virus was not included in this specific grant, as the application was submitted before the current outbreak,



the technology potentially can be expanded to include it. “FeverPhone,” a smartphone based molecular diagnostics platform for point-of-care differential diagnosis of six common causes of acute febrile illness includes: (1) a specialized 6-plexed colorimetric IgM/IgG assay cartridge that exploits color discrimination assay on mobile devices, (2) associated iPad based hardware that allows rapid interpretation of the cartridge results, and (3) software that combines differential molecular diagnosis with a confirmatory symptomatic interface.

356. As a result of contracts with the National Institutes of Health’s (NIH) National Institute of Biomedical Imaging and Bioengineering, Cornell University, and Apple Inc. for the development and commercialization of the “FeverPhone” and the “Apple Inc.’s Electronic Communications Device” the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff’s inventions described in and covered by the ‘439, 752, and ‘990 Patents.

### **Solar Thermal PCR Test: Apple iPhone**

#### **Count I:**

357. Upon information and belief, the National Institutes of Health’s (NIH) National Institute of Biomedical Imaging and Bioengineering, after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the

same or equivalent to the specifications of the “Solar Thermal PCR Test” and the “Apple Inc.’s Electronic Communications Device”.

358. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Institutes of Health’s (NIH) National Institute of Biomedical Imaging and Bioengineering has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

359. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems

that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

360. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Solar Thermal PCR Test" that is interconnected to the Apple iPhone. The National Institutes of Health's (NIH) National Institute of Biomedical Imaging and Bioengineering has awarded to Cornell a four-year, \$1 million grant to hone technology for a quick, in-the-field diagnosis of Kaposi's sarcoma – a cancer frequently related to HIV infections. From the sun, a solution: researchers have remodeled an energy-intensive medical test – designed to detect a deadly skin cancer related to HIV infections – to create a quick diagnostic assay perfect for remote regions of the world, according to Scientific Reports (Feb. 20). The solar thermal PCR test for a smartphone: By harnessing the sun's power and employing a smartphone application this Cornell-developed solar thermal PCR (polymerase chain reaction) test for a smartphone, medical technicians can obtain human skin biopsies, deposit the biopsied material into the solar thermal PCR device and obtain completed diagnostic tests with a smartphone.

361. As a result of contracts with the National Institutes of Health's (NIH) National Institute of Biomedical Imaging and Bioengineering, Cornell University, and Apple Inc. for the development and commercialization of the "Solar Thermal PCR Test" and the "Apple Inc.'s Electronic Communications Device" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, 752, and '990 Patents.



**Lab-on-a-Drone: Apple iPhone**

**Count I:**

362. Upon information and belief, the National Institutes of Health's (NIH), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Lab-on-a-Drone" and the "Apple Inc.'s Electronic Communications Device".

363. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the National Institutes of Health's (NIH) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

364. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's

property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

365. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the 752 patent, and claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "Lab-on-a-Drone" that is interconnected to the Apple iPhone. The National Institutes of Health's (NIH) has awarded to AI Biosciences, Inc. a grant (Grant No. 1R43AI107984), for Nucleic acid-based approaches like the polymerase chain reaction (PCR) that's considered diagnostic gold standards in terms of both sensitivity and specificity. Smartphone-enabled real time PCR. Quantitative smartphone-based fluorescence detection. (A) The *PCR to Go* analysis app enables smartphone-based image acquisition, processing, and data analysis. The *PCR to Go* iPhone app was run in continuous mode. In-flight PCR was performed using a 3D Robotics IRIS+ quadcopter drone. Also obtained successful results using a DJI Phantom 2 quadcopter drone. Apple's iOS software development kit (SDK) to access and control advanced iPhone camera features. A 3D printed enclosure and interchangeable smartphone cradle ensures

alignment of the camera. Smartphone-based fluorescence detection system delivers a rugged inexpensive biochemical analysis platform ideally suited for field deployment. Convective PCR runs for Ebola and Staphylococcus aureus detection were performed using a preincubated hot start reagent mixture. Other diagnostic scenarios can potentially benefit from this level of performance, including viral load monitoring of HIV infection.

366. As a result of contracts with the National Institutes of Health's (NIH), AI Biosciences, Inc., and Apple Inc. for the development and commercialization of the "Lab-on-a-Drone" and the "Apple Inc.'s Electronic Communications Device" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, 752, and '990 Patents.

**Eureka Aerospace High Powered Electromagnetic  
System, or HPEMS**

**Count I:**

367. Upon information and belief, the U.S. Air Force and the U.S. Marines, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Eureka Aerospace High Powered Electromagnetic System, or HPEMS.



368. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Air Force and the U.S. Marines has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

369. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

370. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 11 of the '891 Patent, and claims 19, 15, and 21 of the '891 Patent as a current manufacturer, consumer, and/or user of the Eureka Aerospace High Powered Electromagnetic System, or HPEMS: The U.S. Air Force request for an "air-delivered capability to disable moving ground vehicles while minimizing harm to occupants." Presumably the Air Force wants to look beyond helicopter-mounted snipers, and so Eureka Aerospace's device could potentially fit the bill. The U.S. Marines have lined up as possible customers. The idea is that an electromagnetic pulse (from a remote location) would be used to disable a car's microprocessors, chips, and whatever other electronics are keeping it running. Boeings; as partner provided funds for research.

371. As a result of contracts with the U.S. Air Force (DOA), the U.S. Marines, Eureka Aerospace, and the Boeings Company for the development and commercialization of the Eureka Aerospace High Powered Electromagnetic System, or HPEMS the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

### **Laser Weapons System (LaWS)**

#### **Count I:**

372. Upon information and belief, the U.S. Navy, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications

and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “Laser Weapons System (LaWS)”.

373. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Navy has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

374. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems



that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

375. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 11 of the '891 Patent, and claims 19, 15, and 21 of the '891 Patent as a current manufacturer, consumer, and/or user of "Laser Weapons System (LaWS): A vehicle adapted (e.g. small boats, drones, aircraft, UAVs). In 2010, Kratos Defense & Security Solutions was awarded an 11-million-dollar contract to support the Naval Surface Warfare Center (NSWC) in the development of the Laser Weapons System (LaWS) for the U.S. Navy's Directed Energy and Electric Weapon Systems (DE&EWS) program. The LaWS is designed to fry sensors, burn out motors, and detonate explosive materials. Against small UAVs (vehicle), one can be shot down two seconds. When facing small boats (vehicle), the laser targets a craft's motor to disable it. US Navy officers are testing onboard the USS Ponce, this drone (vehicle) killing laser. When the laser makes contact with a drone, the vehicle heats to a temperature of more than 1,000°F and explodes. The laser will be used to destroy aircraft (vehicle) and small boats (vehicle). The \$40 million laser moves at the speed of light. Laser canons are limited only by the amount of electricity that can be generated. It operates in an electromagnetic spectrum so you don't see the beam, it doesn't make any sound, and it's completely silent.

376. As a result of contracts with the U.S. Navy (DON), the Naval Surface Warfare Center (NSWC), and Kratos Defense & Security Solutions for the development and commercialization of "Laser Weapons System (LaWS) the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

**ATHENA (Advanced Test High Energy Asset)**

**Count I:**

377. Upon information and belief, the U.S. Navy, the U.S. Air Force, and the U.S. Army, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “ATHENA (Advanced Test High Energy Asset)”.

378. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Navy, the U.S. Air Force, and the U.S. Army has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

379. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s

property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

380. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 11 of the '891 Patent, and claims 19, 15, and 21 of the '891 Patent as a current manufacturer, consumer, and/or user of "ATHENA (Advanced Test High Energy Asset): A vehicle adapted (e.g. small boats, drones, aircraft, UAVs). Lockheed Martin is providing the U.S. military with laser weapons capable of 30 KW beams, according to three Lockheed executives in an interview with Defense News. Lockheed Martin's ATHENA (Advanced Test High Energy Asset) lasers can disable a truck's engine from over a mile away with only 30 KW of power. ATHENA is an advancement of the company's ADAM (Area Defense Anti-Munitions) laser weapon system, which successfully disabled two boats about a mile away. Lockheed Martin's Air Defense Anti Munitions (ADAM) has weathered several tests destroying incoming rockets. They can counter rockets, artillery and mortars, and land, sea and air vehicles, including small drones with permanent damage to electronics and computer systems within the target. They can cause varying degrees of damage, by shooting a plane from the sky or



destroying a truck engine. Lockheed Martin's ATHENA laser weapon system defeats a truck target by disabling the engine, demonstrating its military effectiveness against enemy ground vehicles.

381. As a result of contracts with the U.S. Navy, the U.S. Air Force, the U.S. Army, and Lockheed Martin for the development and commercialization of "ATHENA (Advanced Test High Energy Asset)" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

**Counter-Electronics High-Powered Microwave Advanced Missile Project (CHAMP)**

**Count I:**

382. Upon information and belief, the U.S. Air Force, (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the "Counter-Electronics High-Powered Microwave Advanced Missile Project (CHAMP)".

383. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the

actions and conduct of its agents, including at least that of the U.S. Air Force has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

384. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

385. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 11 of the '891 Patent, and claims 19, 15, and 21 of the '891 Patent as a current manufacturer, consumer, and/or user of "Counter-Electronics High-Powered Microwave Advanced Missile Project (CHAMP)": A vehicle adapted (e.g. cars, trucks, small boats, drones, aircraft, UAVs). Boeing successfully tested the electromagnetic pulse; Counter-

electronics High-powered Microwave Advanced Missile Project (CHAMP). CHAMP's High Power Microwave instrument that provided the disabling EMP blast is a product of Raytheon Ktech. In 2012, it was reported that a CHAMP mission in Utah managed to hit and subsequently disable seven separate targets in one mission, effectively knocking out the target's data and electronic subsystems. A recent solicitation from the Pentagon calls for a non-explosive electromagnetic pulse artillery shell capable of wiping out 'a wide range of electronics, critical infrastructure, and computer-based systems. Raytheon first revealed the project during a media roundtable in Washington. It boasted the device is effective against drone swarms over a wide area, and has been proven to stop cars and vehicles and could even throw off missiles guided by electronics.

386. As a result of contracts with the U.S. Air Force, Raytheon Ktech, and Boeing for the development and commercialization of "Counter-Electronics High-Powered Microwave Advanced Missile Project (CHAMP)" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

### **Northrop Grumman X-47B UCAS X-47B Control**

#### **Display Unit (CDU)**

#### **Count I:**

387. Upon information and belief, the U.S. Navy and the U.S. Naval Air Systems Command (NAVAIR), (the United States), after several notices between the years 2006-2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private



and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Northrop Grumman X-47B UCAS / X-47B Control Display Unit (CDU).

388. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Navy and the U.S. Naval Air Systems Command (NAVAIR) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

389. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of

the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

390. Upon information and belief, the United States has infringed, and continues to infringe, at least claim 11 of the '891 Patent, and claims 19, 15, 27, and 21 of the '891 Patent as a current manufacturer, consumer, and/or user of the Northrop Grumman X-47B UCAS / X-47B Control Display Unit (CDU): The U.S. Navy's UCAS-D program is designed to demonstrate the ability of a, fighter-sized unmanned aircraft to land on and be launched from the flight deck of a Navy aircraft carrier underway at sea. Northrop Grumman Corporation (NYSE: NOC), a leader in unmanned systems, serves as the Navy's prime contractor for the UCAS-D program, which is managed by U.S. Naval Air Systems Command (NAVAIR). Under contract awarded in Aug. 2007, Northrop Grumman designed the X-47B. From a remote place the X-47B Control Display Unit controls the aircraft's stall, stop, and slow-down means.

391. As a result of contracts with the U.S. Naval Air Systems Command (NAVAIR), and the Northrop Grumman Corporation (NYSE: NOC) for the development and commercialization of the Northrop Grumman X-47B UCAS / X-47B Control Display Unit (CDU) the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

**Oshkosh Defense Autonomous Unmanned Ground**

**Vehicle (UGV) "TerraMax"**

**Count I:**

392. Upon information and belief, the U.S. Marine Corps, (the United States), after several notices between the years 2006 -2012, has “taken” and continues to “take” the Plaintiff’s personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a “Government Fifth Amendment Takings”, the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the Oshkosh Defense Autonomous Unmanned Ground Vehicle (UGV) “TerraMax”.

393. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the U.S. Marine Corps has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

394. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had



a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

395. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 44, 55, and 27 of the ‘891 Patent, as a current manufacturer, consumer, and/or user of the Oshkosh Defense Autonomous Unmanned Ground Vehicle (UGV) “TerraMax”: U.S. defense contractor Oshkosh Defense autonomous unmanned ground vehicle (UGV) “TerraMax” is now equipped with radar and LIDAR; which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges; uses lasers to detect nearby objects, along with a drive-by-wire system that electronically controls engine speed, transmission, braking, and steering. The system does more than steer and hit the throttle and brakes. It can intelligently control the driveline locks to navigate deep sand or mud, without input from the operator. The “TerraMax” technology has recently completed its first technical assessment (FTA) for the U.S. Marine Corps UGV (CUGV) initiative. The Cargo UGV program is sponsored by the Marine Corps Warfighting Laboratory and the Joint Ground Robotics Enterprise Robotics Technology Consortium.

396. As a result of contracts with the U.S. Marine Corps, and Oshkosh Defense LLC for the development and commercialization of the Oshkosh Defense Autonomous

Unmanned Ground Vehicle (UGV) "TerraMax" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

**DreamHammer's "Ballista" Software for Computer,  
Tablet or Smartphone**

**Count I:**

397. Upon information and belief, the United States Department of Defense Pentagon and the U.S. Navy, (the United States), after several notices between the years 2006 - 2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the DreamHammer "Ballista" Software for Computer, Tablet or Smartphone.

398. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the United States Department of Defense Pentagon and the U.S. Navy has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and

without authorization and consent from the Plaintiff; Plaintiff's personal property subject matter as described in and covered by the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 patents.

399. Further, as a result of the Government (United States) Fifth Amendment "Takings" of Plaintiff's property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the "Takings" is a reduction in value of the Plaintiff's property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff's competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on "the reasonable investment-backed expectations" of the Plaintiff; the character of the Government's action was triggered when the "Takings" caused a permanent physical invasion of the Plaintiff's property and eliminated all economically beneficial uses of such property by way of the Government's manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government's actions under Section 1491.

**Count II:**

400. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 44, 55, and 27 of the '891 Patent, as a current manufacturer, consumer, and/or user of the DreamHammer "Ballista" Software for Computer, Tablet or Smartphone: Its first product, Ballista, is an OS for drones and allows one person to simultaneously control multiple drones of any type. It features a plug and play architecture that can be integrated into any unmanned system. Ballista has been licensed to government agencies including the U.S. Navy's Program Executive Office (PEO) Unmanned Aviation and Strike



Weapons. Owners of separate systems can share software, which over the long run could save the Defense Department billions of dollars in software costs, officials predict. On July 3, 2013, DreamHammer announced it was partnering with Lockheed Martin to use the company's software for integrated command and control of Lockheed Martin's unmanned aerial vehicles. Lockheed and the Pentagon have worked with DreamHammer to create the software which works with boats, planes or trucks. Ballista open software platform allows for autonomous and simultaneous control. Autonomous and unmanned vehicles involve a transfer of control from direct human input to automated or remote control.

401. As a result of contracts with the U.S. Navy, DreamHammer Inc., Lockheed Martin Corporation, the United States Department of Defense Pentagon, Apple Inc., and the Samsung Group for the development and commercialization of the DreamHammer "Ballista" Software for Computer, Tablet or Smartphone the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '891 Patent.

#### **iControl Inc. "M-LOCK"**

##### **Count I:**

402. Upon information and belief, the Department of Homeland Security (DHS), (the United States), after several notices between the years 2006 -2012, has "taken" and continues to "take" the Plaintiff's personal property and used it for the benefit of the public without paying just compensation to the Plaintiff. Pursuant to the guidelines of a "Government Fifth Amendment Takings", the Government has taken the intangible private and personal property subject matter as outlined in the Plaintiff's '497, '033, '752, '761, '280, '891, '990, '189, and '439 U.S. patents specifications and patent claims that are significantly the same or

equivalent to the claimed inventions of the Plaintiff. Significantly the same or equivalent to the specifications of the “M-LOCK” locking device.

403. As a result of at least one of, a public offer to contract; public offer to enter into a cooperative agreement; the publication of a solicitation; a public offer to award; a public announcement of tangible subject matter material; a public offer for a grant; or, the interagency exchange of unauthorized information, the United States actions and conduct and the actions and conduct of its agents, including at least that of the Department of Homeland Security (DHS) has used for the benefit of the public, authorized the use for the benefit of the public, shared intangible subject matter without a license or legal right, and without authorization and consent from the Plaintiff; Plaintiff’s personal property subject matter as described in and covered by the Plaintiff’s ‘497, ‘033, ‘752, ‘761, ‘280, ‘891, ‘990, ‘189, and ‘439 patents.

404. Further, as a result of the Government (United States) Fifth Amendment “Takings” of Plaintiff’s property and using it with the public without just compensation to the Plaintiff, the resulting economic impact of the “Takings” is a reduction in value of the Plaintiff’s property by virtue of the access, disclosure, manufacture, development or use, by or for the Government and its third party awardees; has destroyed the Plaintiff’s competitive edge; has had a substantial adverse impact (means unfavorable or harmful; preventing success or development) on “the reasonable investment-backed expectations” of the Plaintiff; the character of the Government’s action was triggered when the “Takings” caused a permanent physical invasion of the Plaintiff’s property and eliminated all economically beneficial uses of such property by way of the Government’s manufacture and development of products, devices, methods, and systems that are significantly the same or equivalent to the claimed inventions of the Plaintiff. Just compensation is due the Plaintiff for the Government’s actions under Section 1491.

**Count II:**

405. Upon information and belief, the United States has infringed, and continues to infringe, at least claims 125, 148, 135, 35, 39, and 44 of the '990 Patent, and claim 36 of the '752 Patent as a current manufacturer, consumer, and/or user of the "M-LOCK" locking device for autonomous operation of a locking device based on a status of the locking device, wherein the one or more sensors include one or more of a movement sensor, a temperature sensor, a humidity sensor, an infrared sensor, a radioactivity detection sensor, an acoustic sensor, and a chemical detection sensor. M-Lock's critical parameter is anti-tamper, multi-modal wireless connectivity. M-Lock's critical function is physical security, location and alerting; and, is available where wireless connectivity is available. A method for autonomous operation of a locking device based on a status of the locking device. The Department of Homeland Security (DHS) "TRUST" RFP system Communication Requirements. iControl Inc. locking seal "M-Lock" (Patent application: M-LOCK Device and Associated Methods; US 20100283575 A1).

406. As a result of contracts with the Department of Homeland Security (DHS), L-3 Communications and iControl Inc. for the development and commercialization of the M-Lock locking seal, the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '752, and '990 Patents.



**PRAYER**

WHEREFORE, Plaintiff respectfully requests judgment in its favor against the United States granting Plaintiff the following relief:

407. Entry of judgment that the subject matter set forth in the ‘497; ‘752; ‘891; ‘990; ‘189 and ‘439 patents have been used for the benefit of the public by and for the United States without lawful right within the meaning of 28 U.S.C. § 1491(a);

408. Entry of judgment that the inventions set forth in the ‘497; ‘752; ‘891; ‘990; ‘189 and ‘439 patents have been used and manufactured by and for the United States without license or lawful right within the meaning of 28 U.S.C. § 1498(a);

409. Reasonable and entire compensation for the benefit of public use by and for the United States of subject matter covered by and described in the ‘497; ‘752; ‘891; ‘990; ‘189 and ‘439 patents under 28 U.S.C. § 1491(a), in an amount to be determined at trial;

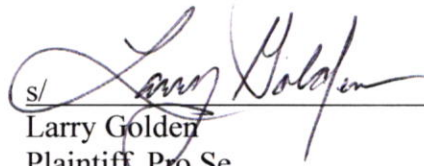
410. Reasonable and entire compensation for the unlicensed use and manufacture by and for the United States of patented devices covered by and described in the ‘497; ‘752; ‘891; ‘990; ‘189 and ‘439 patents under 28 U.S.C. § 1498(a), in an amount to be determined at trial;

411. Plaintiff’s reasonable fees for expert witnesses and attorneys, plus its costs in accordance with 28 U.S.C. §§ 1491(a) and 1498(a);

412. Pre-judgment and post-judgment interest on Plaintiff’s award; and

413. All such other relief that the Court deems just and proper.

Respectfully submitted,

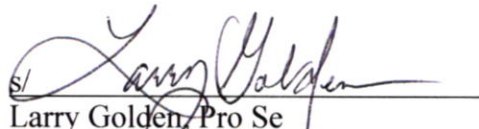
A handwritten signature in cursive script, appearing to read "Larry Golden", is written over a horizontal line. To the left of the signature, the letters "s/" are written.

Larry Golden  
Plaintiff, Pro Se  
740 Woodruff Rd., #1102  
Greenville, South Carolina 29607  
atpg-tech@charter.net

**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that on this 8th day of August, 2017, a true and correct copy of the foregoing FINAL AMENDED COMPLAINT §§ 1491(a) and 1498(a) and FINAL CLAIM CHART was served upon the following defendant by the methods indicated below:

Nicholas J. Kim  
Trial Attorney  
Commercial Litigation Branch  
Civil Division  
Department of Justice  
Washington, DC 20530  
(By: Overnight Express Mail)

  
Larry Golden, Pro Se  
740 Woodruff Rd., #1102  
Greenville, South Carolina 29607  
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